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INDEX OF SUBJECT MATTER

COLLECTIVE REVIEWS

Tuberculosis of the Bones and Joints. <i>Henry Ling Taylor, M.D., F.A.C.S., New York</i>	1
The Present Status of Radiotherapy. <i>Howard Pirie, M.D., Montreal</i>	117
Pregnancy and Tuberculosis. <i>John Osborne Polak, M.Sc., M.D., F.A.C.S., and Harvey Burleson Matthews, B.Sc., M.D., Brooklyn</i>	233
Surgical Treatment of Tic Douloureux. <i>Urban Maes, M.D., F.A.C.S., New Orleans</i>	349
Surgery of the Seminal Vesicles and Their Ducts. <i>John R. Caulk, A.M., M.D., F.A.C.S., St. Louis</i>	465
Uses of the High-Frequency Current in the Treatment of Tumors of the Bladder and Other Pathological Conditions of the Urinary Tract. <i>Henry G. Bugbee, M.D., F.A.C.S., New York</i>	581

ABSTRACTS OF CURRENT LITERATURE

- A**BBOTT'S scoliosis treatment, Experience with, 283
 Abderhalden's reaction, 75; Mechanism of, 165; Experience with, 166; Serum proteases and mechanism of, 166; Diagnosis of pregnancy by, dialysis, 199; of pregnancy, method and specificity, investigations on healthy women post- and premenstrually, 200; Investigations conducted with aid of, during pregnancy and other gynecological affections, including cancer, 200; Present status of, test, 403; in the non-pregnant, 621; Experience with, in obstetrical hospital of Basel, 651
 Abdomen, Gunshot injuries of, 412; Gunshot injuries of, and early operation in field hospital, 623; Perforating gunshot wounds of, 523; Shoulder pain—referred phrenic nerve symptom—in acute surgical diseases of, 274
 Abdominal injuries, Thirty-three laparotomies in cases of, 413; Treatment of, at the front, 413
 Abdominal wounds, Treatment of gunshot, by compression bandage, 293; Necessity for systematic operation in, 524; Points of technique in closure of, 603
 Abdominal, Gall-stones during the course of 1,066, sections for pelvic diseases, 31; Analysis of mortality of, surgery, 35; Old and infected, pregnancy with extension of long bones into bladder and bowel, 67; Leucocytosis a deceptive sign in, hæmorrhages, 170; Management of septic conditions in, cavity, 271; Local anaesthesia of, cavity, 362; Reconstruction and repair of, organs with intestinal grafting, 389; Transparency of, walls in pregnancy, 428; surgery in ambulence at the front, 625
 Abduction treatment of fracture of clavicle, 158
 Abortion, Therapeutic, indications and methods of procedure, 70; Method of, and simultaneous sterilization in pulmonary tuberculosis, 191; Serological findings in 100 cases, bacteriological findings in 50 cases, and a résumé of 679 cases of, at Michael Reese Hospital, 308; Repeated rupture of echinococcus cyst of kidney accompanied by, 322; Functional testing of kidneys during pregnancy to decide question of inducing, 544; Causes, prevention, and treatment of artificial perforation of the uterus in, 646
 Abscess, Chronic, of bone, 39, 153; Brain, following anaesthesia for dental purposes, 564; Mastoiditis and mastoid, without suppuration from middle ear and without apparent ear inflammation, 93; Simple method of aborting middle-ear inflammation and infection leading to mastoid, 663; Idiopathic mastoid, 664; Perinephritic, review of cases operated on at Massachusetts General Hospital from 1899 to 1913, 548; of the spleen, 151, 611; Temporosphenoidal, with unusual complications, 447; Typhoid, 407; Early incision of breast, during lactation, 597
 Absorption fever or retention fever, 173
 Accessory, Röntgen ray examination of, sinuses, 409
 Acephalus, Rare foetal teratisms, with illustrative cases, symphidia, craniopagus, and, 77
 Achylia gastrica, Analysis of, 483
 Actinomycosis, Primary, of the salivary glands, 248; Clinical study of, 618
 Adenitis, Treatment of tuberculous cervical, 17
 Adenocarcinoma, Complete removal of, of the uterus by exploratory curettage, 60; of the kidney, 434; Pyelonephritis complicated by, and chyluria, 548
 Adenoids, Partial paralysis of soft palate following removal of tonsils and, 562
 Adenoid disease, Ultimate results of operations for chronic sinus disease, chronic tonsillar and tonsillar and, and chronic diseases of middle ear, 215
 Adenoma, Polyposis of colon and multiple benign malignant, limited to sigmoid flexure of colon, 28; tubular ovarii carcinomatosum and relation between tubular ovarian adenoma and embryonal rests, 65; Polyglandular syndrome with adrenal hypernephroma and, of the pituitary, 203
 Adenomyoma of rectovaginal septum, 66
 Adhesions, Prevention of post-operative, in peritoneal cavity, 140
 Adnexa, Diathermy in treatment of diseases of, 184; Etiology of diseases of, 303; Tuberculosis of, 639
 Adrenalin, Should vasoconstrictors, pituitrin, be used in emergencies, especially in surgical shock, 403
 Adrenals, Influence of removal of, and one-sided thyroidectomy upon gastric and duodenal mucosa; experimental production of lesions, erosions and acute ulcers 434
 Air passages, Early recognition of cancer of, 668
 Albee's operation for spondylitis, 283
 Albumin, Parenteral digestion of, and its relation to obstetrics and gynecology, 317

- Albuminuric retinitis, Relation of, to toxæmias of pregnancy, 643
- Alcohol drain treatment of puerperal temperature, 314
- Alexander-Adams operation and its results, 637
- Aluminum skeleton splints in the treatment of compound fractures, 278
- Amenorrhœa, Clinical significance of, in diagnosis of tubal pregnancy, 307; Organotherapy in, 635
- Aminolytic ferment in stomach in carcinoma, 487
- Aminonitrogen determination, Application of the Van Slyke, to diagnosis of cancer, 280
- Amnesia, Study of scopolamine and morphine, as employed at Long Island College Hospital, 311; Anæsthesia and, in childbirth, 312
- Amputations, Reduction of number of, at the front, 177; Usefulness of ventral decubitus in some leg, 279; Improved method of suturing flaps in, of cervix, 299; Anteriorcolporrhaphy and, of cervix combined as a single operation for use in treatment of genital prolapse, 304; for fracture of femur in the aged, 399; Injection of salt solution into femoral vein during, of femur and disarticulation of hip, 500; Resection of knee to avoid, of thigh in fracture of knee, 524; Technique for late secondary, in war injuries, 528; of the breast by transverse incision, 598; Resection in reference to, in certain infected gunshot fractures of knee-joint, 625
- Anæmia, Splenectomy in primary pernicious, 34; Classification and analysis of clinical types of splenomegaly accompanied by, 610
- Anaërobic bacteria, Importance of, in puerperal infection, 313
- Anæsthesia, of brachial plexus according to method of Kulenkampff on the basis of 200 cases, 14; in urology, 14; in goiter operations, 18; Spinal, in gynecology, 127; Experience derived from first twenty-two cases of vaginal operations performed under parametric infiltration, 186; Novocaine, in normal labor, 196; Influence of preliminary narcotics on induction, maintenance, and after-results of, 245; Anoci-association, in theory and practice, 246; Ether-oil colonic, a report of thirty-six head and neck operations, 247; Nitrous-oxide, in obstetrics, 312; and amnesia in childbirth, 312; Scopolamine-narcophine, in labor, 312; Prostatectomy under local, 326; Spinal, in forty-three suprapubic prostatectomies, 326; Scopolamine-morphine-cocaine, in surgery, 361; Spinal, 362; Local, of abdominal cavity, 362; Morphine-scopolamine, in obstetrics, 430; in obstetrics, 430; Etherometer, a means of mechanical, 474; Intravenous isopral-ether, in military surgery, 530; Irritation of kidney from novocaine, 547; Brain abscess following, for dental purposes, 564; with a description of the Röth-Dräger apparatus, 594; By- and after-effects of Kulenkampff's plexus, 595; Shock, anoci-association and, 595; Sacral, especially in gynecological operations, 642; in gynecological operations, 642
- Anæsthetizing, Attempts at, the lumbar plexus, 401
- Analgesia, Nitrous-oxide gas, in obstetrics, 195, 430; Technique of, in intranasal surgery, 560
- Anastomosis, End-to-end, of the axillary artery, 172; Futility of arteriovenous, in treatment of impending gangrene of lower extremity, 172; Uretero-enteric, 209
- Anatomical specimens of unusual clinical interest, 616
- Aneurism, Ligation of common iliac artery for iliofemoral, 290; Traumatic, 406; Operation in fifteen cases of traumatic, 406; Surgery of blood-vessels, 406; Experience with, in war with special reference to suturing vessels, 411; Gunshot, and their treatment, 514; Pathology of diseases of blood-vessels which are important surgically and of, of peripheral arteries, 621
- Angiofibroma, Inoperable, maxillary antral sarcoma, 95
- Angioid streaks in brother and sister; suggestion that streaks are non-vascular, 91
- Angioma, of uvula, 218; Cavernous, of tongue, 219; Cavernous, of spleen, 269
- Angiomata, Treatment of, by injection of boiling water, Wyeth method, 515
- Angiotribe in hæmorrhoids, 268
- Ankle, Fractures about, 159
- Ankylosed joints, Mobilization of, 279; Mobilization of, of knee, 398
- Anoci-association, Nitrous oxide-oxygen, in practice, 246; Shock, and anæsthesia, 595
- Anterior poliomyelitis, Medical treatment of, 47; Prophylaxis and orthopedic management of, 47; Diagnosis, symptomatology and pathology of acute, 47
- Anterior colporrhaphy and amputation of cervix combined as a single operation for use in treatment of genital prolapse, 304
- Antiseptics, Urinary, 87; Experimental studies of various, for use in treatment of wounds, 360; Use of certain, in treatment of infected wounds, 622
- Antitetanic serum, Tetanus and, complications and late death in tetanus, 289; Treatment of tetanus by endoneural injection of, 509
- Antitoxin, Intraspinal administration of, in tetanus, 508; Combined, and narcotic treatment of tetanus, 403; Intraneural injection of tetanus, in local tetanus, 620
- Antitrypsin, Diagnostic value of, content of blood serum, 76
- Antrum, Lipoma of maxillary, 447; Inflammatory disease of, diagnosis and treatment, 560
- Anuria due to unilateral calculous obstructions, 320
- Aplasia, Periodic bleeding from mouth (vicarious menstruation) associated with hypoplasia of uterus and tubes and, of ovaries and mammary glands, 642
- Appendectomy, Stump treatment in, 27
- Appendicitis, Sequence of pathological changes in acute, and appendicular peritonitis, 145; with the pain on left side, 382; in children, 491; and typhoid, 607
- Appendicostomy, 491
- Appendicular obliteration, 267
- Appendix, Ruptured, at full-term pregnancy, 71; Carcinoma of, plea for its removal whenever the abdomen is opened, 490
- Arch of foot, Painful anterior, operation for relief by means of raising arch, 48
- Army, Health of, 630
- Arteries, Pathology of disease of blood-vessels which are important surgically, and of aneurism of peripheral, 621
- Arteriomesenteric, Diagnosis and treatment of, occlusion in child, 374
- Arteriosclerosis, and control of uterine hæmorrhage, 301; with relation to prostate operations, 326
- Arteriovenous anastomosis, Futility of, in treatment of impending gangrene of extremity, 172
- Artery, End-to-end anastomosis of the axillary, 172; Bronchiectasis treated by ligation of branch of pulmonary, 253; Ligation of common iliac, for iliofemoral aneurism, 290; Operative treatment of, thrombosis and embolism, 291; Ligation of splenic and gastro-epiploica sinistra, in surgery of spleen, 611; Surgery of, in embolism, 53, 170
- Arthritis, urica, 40; of joints of hand following Colles' fracture, 158; Treatment of rheumatoid, of hypertrophic type, 275; Treatment of suppurative, of knee in military surgery, 294; Pituitary gland in gonorrhœal, 392; Diagnosis of suppurative, following gunshot fractures, 415; deformans in subluxation of hip, 500; Treatment of convalescent stage of infectious and atrophic types of, 612

- Artificial, Contribution to attempts made at, fertilization in the human, 199; Improved technique in forming support for, eye, 441; Condition of larynx and trachea in stillborn infant; its bearing on, respiration, 654
- Ascites, Clinical experience with plastic drainage for, 482
- Asepsis, 126
- Atresia, Labyrinthitis following operation for, 443
- Atrophy in nurslings and congenital lesions of liver in newborn, 77
- Auditory, Post-mortem specimen of radical mastoid operation performed six months before death to illustrate secondary, tuberculosis in adult, 213; Tuberculosis of, apparatus, 214; Tuberculosis of, apparatus treated by permanent drainage of lateral ventricle, 329
- Auricle, Operation for epithelioma of, with secondary involvement of glands, 555; Epithelioma of, treated by diathermy, 555
- Austrian army, Experiences with, 629
- Autogenous bone-grafts versus Lane plates, 398; Treatment of fractures by, bone transplants, 615
- Auto-infection, 303
- Axillary artery, End-to-end anastomosis of, 172
- Axis traction rods, Tarnier, applied to Simpson obstetric forceps, 432
- BACILLUS COLI**, Keratitis caused by infection with, 555
- Back, Gunshot wound of, producing paralysis, relieved by laminectomy, 528
- Bacterial flora of wounds produced during present war, 418
- Bacteriological, Serological findings in 100 cases, findings in 50 cases, and a résumé of 679 cases of abortion at Michael Reese Hospital, 308
- Bacteriology, of urinary tract in children, 210; of eustachian tube, 213
- Bacterins, Principal methods used to standardize, with reference to use of hæmocytometer, 168
- Bags, Dilatation of cervix by means of, 73
- Bandage, Treatment of abdominal gunshot wounds by means of compression, 293
- Bartholin's gland, Carcinoma of, 426
- Basal-cell, prickle-cell, and skin cancers, 162
- Basedow's disease, Failures in treatment of, 137; Indications for and results of operation for, 478
- Battery, Improved, for cystoscopy, 439
- Battle, Wounds received in, observations made during recent service in Austria, 206
- Biceps flexor cubiti, Rupture of, 392
- Bichloride poisoning, Successful treatment of, by hydraulic irrigation through cæcostomy operation, 27
- Bile, Clinical value of examination of, 388; Feeding of, collected from biliary fistulæ in obstruction, 388; Surgery of common, duct, 388; Diagnosis of carcinoma of, and pancreatic ducts, 494
- Bipolar origin, Case showing, of faucial tonsil, 560
- Birth palsy, 318
- Bladder cancer, Radium in, 325; and kidney cancer, 551; Early diagnosis of, 551; Case of, 552
- Bladder tumors, Soft, 82; Fulguration treatment of, 210, 660; Unusual, 435; Diagnosis and treatment of papillary or villous, 550; Cases of, 550; Pathological diagnosis of, with reference to papilloma and carcinoma; study of one hundred and thirteen neoplasms, 658; Operative treatment of, 660; Desiccation treatment of, 660
- Bladder, irritability in women, 66; Old and infected abdominal pregnancy with extension of long bones into, and bowel, 67; Observations upon diverticulum of, 82; Rare type of, ulcer in women, 325; Foreign body in urinary, 325, 550; Ulceration of, 435; Fracture of pelvis with extraperitoneal rupture of, 435; Early recognition of malignant disease of, and prostate, 551; Transposition of, and uterus for cure of cystocele and descensus uteri, 637; Gummatous ulceration of, 660
- Bleeding, Pituitary extract in uterine, 180
- Blindness, incidental to external ethmoidal operation, 330
- Blood-vessel, Newer, operation, 55; Infected wounds of, 171; Protecting large, in extirpating tumors, 360; Surgery of, 406, 514; Experience with aneurisms in war, with reference to suturing, 411; Blood and, in hæmophilia, 510; Pathology of diseases of, which are important surgically, and of aneurism of peripheral arteries, 621
- Blood, Sugar content of, in eclampsia, 69; pressure during pregnancy, 76; Diagnostic value of antitrypsin content of, serum, 76; Significance of non-coagulable nitrogen coefficient of, serum in pregnancy and toxæmias of pregnancy, 190; Pathology of spleens removed for certain abnormal conditions of, 270; Influence exerted upon pregnancy by dietetic and medicinal means and analyses in regard to alkalinity of, 315; Inequalities in, flow in hands due to mechanical causes, 510; and blood-vessels in hæmophilia and other hæmorrhagic diseases, 510; Source of, in the urine, 554; pressure and viscosity of, inpericious vomiting and heart-disease during pregnancy, 308; Foreign body in lungs, primary diagnosis made by, examination, 601; Volume of, in pregnancy, 651; Transfusion of, by Kimpton-Brown tube, 495; Transfusion of, 511; Transfusion of, by citrate method, 511
- Boiling water, Treatment of angioma by injection of, 515
- Bone-graft, Original surgical uses of, 43; Fundamental principles involved in use of, in surgery, 160; Autogenous, versus Lane plates, 398; peg in treatment of fractures of neck and femur, 499; wedge in treatment of habitual dislocation of patella, 615
- Bone transplantation, 280; Nasal deformity corrected by, 446; Osteogenic power of periosteum; a note on, 495; Treatment of fractures by autogenous, 615
- Bone, Relation of periosteum to, vitality, 38; Chronic abscess of, 39, 153; Acute surgical metastatic infections with especial reference to, joints and periarticular structures, 39; wedging; method of eliminating introduction of foreign materials in open operations on fractures, 43; External, plating, 160; Treatment of infected gunshot wounds of, and joints, 177, 526; Periosteal regeneration of, 390; Secondary carcinoma of, 392; Fractures of long, with reference to operative treatment, 397; Transplantation of entire, with joint surfaces, 398
- Bowel, When, where, and how to open the, in cases of chronic obstruction of large intestine, 146; Diverticulitis of large, 147; Rupture of, due to blunt force during pregnancy, 192
- Brachial plexus, Anæsthesia of, according to method of Kulenkampf on basis of 200 cases, 14; Late results of four cases of operation for injuries of, 284
- Brain tumor, Results of operations for, 16; Treatment of, 248; Pathology of, 363
- Brain, Gunshot injuries of, and spinal cord, 175; Primary suture of gunshot wounds, especially of, 410; Surgery of gunshot injuries of, 521; abscess following anæsthesia for dental purposes, 564
- Bramann, Puncture of corpus callosum according to, 248
- Breast cancer, 18, 251, 478; Imperative necessity of early diagnosis and operation in female, 479
- Breast carcinoma, Extension of limits of operability of recurrent, 252; Combined radiotherapy of carcinoma of uterus and, 301; X-ray in, 479

- Breast, Sarcoma of, 480; Early incision of, abscesses during lactation, 597; Amputation of, by transverse incision, 598; Conservative operations in cysts of, 598
- Breecb cases, Treatment of impacted, 73; Cæsarean section in, 307
- Bronchial glands, Suppuration of, with perforation into œsophagus, 481
- Bronchial stones, Gangrene of lung from, 481
- Bronchiectasis treated by ligature of branch of pulmonary artery, 253
- Bronchoscopic removal, Fence staple in lung; a new method of, 369
- Bronchoscopy, Fluoroscopic, 481
- Bullets, Operative removal of, and fragments of grenades, with reference to use of electromagnet, 58; Treatment of, and other wounds by ionization, 418; Laminectomy with, lodged in spinal cord, 528; Nerve suture for, wounds, 529
- Burns, Modern treatment of, 619
- Bursitis, Prevalent fallacies concerning subacromial, pathogenesis and rational operative treatment, 156, 497
- Buyo cheek cancer, Special reference to etiology of, 15; Plastic operation for, 476
- Button suture in anterior colporrhaphy, 303
- CÆCOSTOMY**, Successful treatment of bichloride poisoning by hydraulic irrigation through, operation, 27
- Cæsarean section, 644; Three cases of extraperitoneal, 69, 70; Indications and technique for, 190; Eclampsia, acute mania, 190; in breech presentation, 307; Three cases rupture of pregnant uterus through scar of former, 308; Extraperitoneal, for shoulder presentation, 544; its wider application, 644; indications for, 645
- Calcaneus, Subperiosteal osteotomy of os calcis for pes, 48
- Calcification, Histopathology of, of spinatus tendons as associated with subacromial bursitis, 497
- Calcium, Two therapeutic suggestions for gynecological practice; administration of, in inflammatory lesions and extract of true corpus luteum against hæmorrhage, 187
- Calculi, ureteral; special means of diagnosis and newer methods of intravesical treatment, 324; Probable left nephrolithiasis with passage of small, some lodging in urethra causing urethritis, 547; Chemical composition of urinary, 554; of prostate, 661
- Calculus, in vesiculæ seminales in man with enlarged prostate, 85; Urinary, in pelvic portion of ureter, 204; Anuria due to unilateral, obstruction, 320; Giant, of renal pelvis and hypernephroma, 547; Giant, of ureter, 549
- Callosities, Changes of position of foot during life and, on sole associated with them, 400
- Calves' arteries, Gunshot injuries of nerves and use of, in operating on them, 57
- Cancer of bladder, 552; Radium in, 325; Early diagnosis of, 551; and kidneys, 551
- Cancer of breast, 18, 251, 478; Imperative necessity of early diagnosis and operation in, 479
- Cancer of cervix, 299; Results of 60 abdominal hysterectomies for, 299; Surgical treatment of, 537; Radium treatment of, 632
- Cancer of stomach, Histogenesis of, 143; Familial, 375; Early diagnosis of; study of 921 operatively and pathologically demonstrated cases, 486; Observations in diagnosis of, 605
- Cancer of uterus, Radium in treatment of, 59; Value of radium treatment in vaginal cancer and, 59; and radium, 59; Treatment of inoperable, by combined radium and röntgen therapy, 423; Vaginal hysterectomy supplemented by radium therapy for, 423; Case of, apparently cured by radium, 632; Early diagnosis of, 59; Contribution to cure of, by curetting for diagnosis, 59; Education of public to early recognition of, 423; Limitations of radical operation for cervical, 537; Prophylactic treatment and early diagnosis of, 632; Treatment of, in small hospital, 633
- Cancer, Buyo cheek, special reference to etiology, 15; of prostate, 86; Prickle-cell and basal-cell skin, 162; Etiology of, in light of recent cancer research, 164; Investigations conducted with aid of Abderhalden's dialysis reaction during pregnancy and other gynecological affections, including, 200; Renal, associated with renal tissue, 204; Major procedure first in two-stage operation for relief, of rectum, 268; problem, 288, 505; Application of Van Slyke aminonitrogen determination to diagnosis of, 289; Early diagnosis, of rectum, 384; of tongue and floor of mouth, 448; Plastic operation for Buyo cheek, in its early stage, 476; Etiologic relationship existing between gastric ulcer and gastric, 485, 604; Diagnosis of colon, 492; of skin, 503; Influence of heredity upon occurrence of spontaneous, 505; What we know about, and can do for, 507; destruction by radium, 516; Danger signals, of female pelvic organs, 542; of testis, 552; of mouth, 561; Experience with radium and röntgen rays in treatment of, 623; Importance of destroying cervical mucosa in subtotal hysterectomy as, preventing measure, 633; of penis, 661; Early recognition, of upper air passages, 668
- Capsule of faucial tonsil, Surgical anatomy of so-called, 667
- Carcinoma of uterus, Specimen of, four months after ligation of hypogastric artery, 60; Prompt diagnosis of, 300; Preliminary report on use of Percy cautery in, with special reference to use as forerunner to Wertheim operation, 300; Combined radiotherapy of, and breast, 301; treated by radium, 538; Inoperable, method of applying heat in treatment, 539; Should operable, be treated by radiotherapy only, 632
- Carcinoma, Influence of anterior lobe of pituitary body on growth of, 52; Association of, with round ulcer of stomach, 144; Röntgen deep irradiation in, of stomach and intestine, 144; Extension of limits of operability of recurrent, of breast, 252; Operative treatment, of œsophagus, 254; Typical röntgen pictures, of stomach, 264; Intensive mesothorium treatment of gynecological, 305; Resection of cardia for, 370; Stomach, 375, 485; Primary, of liver, operation for recurrence seven years after primary operation, 386; Secondary, of bone, 392; Ovarian, in child aged eleven, 425; of Bartholin's gland, 426; Unusual bladder tumor, 435; of prostate, 436; X-ray in, of breast, 479; Aminolytic ferment in stomach in, 487; of appendix, plea for removal whenever abdomen is opened, 490; Early diagnosis, of bile and pancreatic ducts, 494; Combined treatment of, with mesothorium, röntgen rays and intravenous injection, 507; Technique röntgen ray massive dose for treatment of deep-seated, 517; Treatment advanced, of cervix with radium, 538; Pathological diagnosis of tumors of bladder with particular reference to papilloma and, study of 113; neoplasms, 658
- Cardiorrhaphy, 601
- Carpus, Arrested development of, and tarsus, 161
- Cartilaginous exostoses, multiple—hereditary deforming chondro dysplasia, 399
- Castration, Interstitial gland and its relation to röntgen, 303

- Cataract, congenital; study of interesting cases, 88; Unusual forms of, remarks on management, 88; Acquired non-traumatic, of young, 88; Technique of iridectomy and performance as preliminary to, extraction, 88; Small optical iridectomies in case of lamellar, 88; extraction with preliminary iridectomy irrigation and dissection, 212; incision leaving undetached conjunctival flap with bridge of conjunctiva on temporal side, 663
- Cautery, Percy, preliminary report on use of, in carcinoma uteri, with special reference to its use as forerunner to Wertheim operation, 300
- Cellulitis, Removal of eyes in presence of orbital, 89
- Celluloid tube in finger injuries, 273
- Cerebral, Principles of operative treatment of traumatic, lesions, 249; Status of, surgery, 364
- Cervical, Treatment of tuberculous, adenitis, 17; Limitations of radical operation for, cancer of uterus, 537; Importance of destroying, mucosa in subtotal hysterectomy as cancer-preventing measure, 633
- Cervix, Dilatation of, by means of bags, 73; Cancer of, 299; Improved method of suturing flaps in amputation of, 299; Results of 60 abdominal hysterectomies for cancer of, 299; Anterior colporrhaphy and amputation of, combined as single operation for use in treatment of genital prolapse, 304; Surgical treatment of cancer of, uteri, 537; Treatment of advanced carcinoma of, with radium, 538; Radium treatment of cancer of, of uterus, 632
- Cheek, Buyo, cancer with special reference to etiology, 15; Plastic operation for, cancer in early stages—further report of cure, 476; Plastic operation on, 595
- Chemical, Influence of changes in, environment of life and growth of tissues, 52
- Chemotherapy and tumors, 163
- Childbirth, Anæsthesia and amnesia in, 312
- Chloroform, Late poisoning with, and other alkyl halides in relationship to halogen acids formed in chemical dissociation, 475
- Choked disc, Palliative trephining upon, 128
- Cholecystectomy, Why are disturbances after, so common, 268; Cholecystotomy or, in gall-bladder disease, 387
- Cholecystitis, Surgery of acute, 494
- Cholecystotomy or cholecystectomy in gall-bladder disease, 387
- Cholesterol, Determination of total quantity of, in blood of pregnant women and gynecologic cases, 201
- Chondrodysplasia, Multiple cartilaginous exostoses—hereditary deforming, 399
- Chorea gravidarum, Etiology of, 71
- Chorio-epithelioma, malignum complicating a two-months' pregnancy and degenerated uterine fibroma, 191; of testicle, 436
- Choroiditis, Metastatic, 442
- Chyluria, Pyelonephritis complicated by adenocarcinoma and, 549
- Circulation, Study of reversal of, in lower extremity, 171; Arterial collateral, of kidney, 205
- Citrate, Blood transfusion by, method, 511
- Clavicle, Abduction treatment of fracture of, 158
- Cleft-palate, Factors of safety in, surgery, 218; Nasal flap and modified Langenbeck operation for, 562
- Club-foot, Early treatment of congenital, 49; Wire splint in early treatment of congenital, 49; Tendon plastic operation for paralytic, 282; Treatment of congenital, by subcutaneous excoriation, 400; Prognosis of congenital, and relation to non-operative treatment, 502
- Coccobacillus *foetidus* ozenæ perez vaccine in treatment of ozena, 94
- Coley, Study of efficiency of mixed toxins, in inoperable sarcoma, 167
- Collargol, X-ray diagnosis in gynecology with aid of intra-uterine, injections, 180
- Collateral circulation, Arterial, of kidney, 205
- Colles' fracture, 499; Arthritis of joints of hand following, 158
- Colloidal theory of pathology of glaucoma, 328, 441
- Colomba of iris, Complete bilateral iridæmia in child whose father has bilateral, 89
- Colocolostomy, 29
- Colon, Polyposis of, and multiple benign and malignant adenoma limited to sigmoid flexure of, 28; Developmental reconstruction of, based on surgical physiology, 28; and pericolon abnormalities, 146; Operative treatment of chronic recurrent, pyelitis, 207; Fistulous communications between stomach and, following gastro-enterostomy, 260; Extraperitoneal operation in stricture of sigmoid, 267; Developmental reconstruction of, 383; Diagnosis of, cancer, 492; Treatment of, infection, 383
- Colpeurynter massage, Treatment of chronic posterior parametritis by, and shortening of round ligaments, 425
- Colporrhaphy, Button suture in anterior, 303; Anterior and amputation of cervix combined as single operation for use in treatment of genital prolapse, 304
- Complement-fixation, Results of, studies with corynebacterium Hodgkini, 173; in thyroid diseases, 477; Value of, test in surgical tuberculosis, 613
- Compound fractures, Treatment of, 157
- Congenital, Structural changes in, hip dislocation, 45; Early treatment of, club-foot, 49; absence of vagina and uterus, 540
- Conservative, Infected compound fracture of femur into knee-joint; treatment by, surgery, 45; operation on ovaries, 302; vs. radical treatment of eclampsia, 307; or operative treatment of heart wounds, 411; Delivery after, ovariectomy, 542
- Constipation, Surgical treatment of chronic, 608
- Contracted pelvis, Hydrocephalus; possible relation of a, to hydrocephalus developing after birth, 201; Permanent enlargement of, 201
- Contraction, Dupuytren's, 47; Treatment of second degree of pelvic, 72
- Contracture, Treatment of ischæmic, 279
- Convulsions, Prophylaxis of puerperal, 197
- Coolidge tube, Penetrating power of X-rays from, 292
- Cord injuries, Operative treatment of, in the field, 416
- Corneoscleral trephining; new operation for relief of coma, 442; trephine after Elliot method for reduction of intra-ocular tension, 442
- Corpus callosum, Puncture of, according to Bramann, 248
- Corpus luteum, Therapeutic suggestions for gynecological practice; administration of calcium in inflammatory lesions and extract of, against hæmorrhage, 187; Symptomatology of, cysts, 425
- Corrective, Plea for, and cosmetic surgery of nose, 446
- Cortical, Therapeutic value of, substance of kidney, 548
- Corynebacterium Hodgkini, Results of complement-fixation studies with, 173
- Cosmetic surgery, Plea for corrective and, of nose, 446
- Coxalgic pelvis, 303
- Craniopagus, Rare foetal teratisms with illustrative cases of symphodia, and acephalus, 77
- Craniotomy, Under what conditions is, on living child justifiable, 429
- Creatin as an index of pregnancy intoxication, 427
- Crucial ligaments, Injury of, 614
- Cryptogenic peritonitis, with special reference to manner in which the peritoneum becomes infected, 482

- Cureting, Cure of cancer of uterus by, for diagnosis, 59;
Complete removal of adenocarcinoma of uterus by
exploratory, 60
- Cyst, Removal of large tuberculous, of mesentery of jeju-
num together with corresponding segment of bowel,
20; Post-mortem specimen of pituitary, opened by
Killian-Hirsch operation, 136; Symptomatology of
corpus luteum, 425; of the prostate, 553; Conservative
operations in, of breast, 598; Generalized ostitis fibrosa
with tumors and, 612
- Cystalgia, urethralgia, syndrome vesical and urethral
neuralgia, 552
- Cystic, odontomata, 97; Early, degeneration of ovary,
630
- Cystocele, Transposition of bladder and uterus for cure
of, and descensus uteri, 637
- Cystoscopic, Ureteral stones; technique of their removal
by, methods, 209
- Cystoscopy, Improved battery for, 439
- D**ACRYOCYSTITIS, Method of destroying lachrymal
sac in chronic, 212
- Decompression operations in diseases of optic nerves,
213
- Decubitus, Possibility of preventing, in wounds of spinal
cord, 294
- Deflections, Normal nasal septum and pathology of, 332
- Deformity, Tendon-fixation for, resulting from partial
paralysis, 46; Prevention and correction of, 160; Pre-
vention of, in wounded, 415; Operation for congenital
equinovarus, 615
- Delayed, Pathology of repair of fracture of bone, reference
to pathology of, fracture and non-union, 278
- Delivery after conservative ovariectomy, 542
- Dental surgery, Recent work on, 563
- Dermatosis of pregnancy, 309
- Dermoids of kidney, 78
- Descensus uteri, Transposition of bladder and uterus for
cure of cystocele and, 637
- Desiccation treatment of bladder tumors, 660
- Diabetes and surgery, 52
- Diabetic, Preparation of, patients for operation, 126
- Diathermy, its production and use in medicine and
surgery, 56; in treatment of diseases of adnexa, 184;
in gynecologic diseases, 187; New electrodes in treat-
ment of gonorrhoea by means of, 440; Epithelioma
of auricle treated by, 555
- Diffuse peritonitis, Treatment of acute, 372
- Digestion, Management of surgical disorders of, 608
- Dilatation of cervix by means of bags, 73
- Disarticulation, Injection of salt solution into femoral vein
during amputation of femur and, of hip, 500
- Dislocation of hip, Structural changes in congenital, 45;
Spontaneous, 159; Treatment of congenital, 397
- Dislocation, Old, of head of radius with fracture of ulna
corrected by Lane bone-plate, 159; Bone-graft wedge
in treatment of habitual, of patella, 615
- Displacement of uterus, 635; Acute traumatic, 301; Causes
of backward, 636
- Diverticula, Vesical, 658
- Diverticulitis of large bowel, 147
- Diverticulum, Observations upon, of bladder, 82; Œso-
phageal, new operation for its cure, 482
- Drainage, Tuberculosis of auditory apparatus treated by
permanent, of lateral ventricle, 329; Treatment of
empyema by irrigation, 369; Clinical experience with
plastic, for ascites, 482; Treatment of tetanus by
endoneural injection of antitetanus serum and, of
nerves, 509; Acute purulent meningitis, of meninges;
recovery, 596
- Duct, End-results of gall-bladder and, diseases, 610
- Duodenal mucosa, Production of lesions, erosions, and
acute ulcers in, of dogs by repeated injections of
epinephrin, 25; Influence of removal of adrenals and
one-sided thyroidectomy upon gastric and, 434
- Duodenal ulcers, Diagnosis and treatment of gastric and,
22; Positive diagnosis of, 25; Perforated gastric and,
143; Gastric and, 260, 262; Gastric and, medical cure
by efficient removal of gastric juice corrosion, 374;
Chronic, 378; Gastric and, influence of operative
procedures on gastric motility and secretion, 263;
from a surgical standpoint, 489
- Duodenitis, Phlegmonous, 489
- Duodenum, Exclusion of pylorus and treatment of ulcer
of, 265; Röntgen ray diagnosis of surgical diseases of
stomach and, 488; Ulcer of, 606
- Dysmenorrhoea, Nasal treatment of, 180
- Dystocia due to funnel pelvis, 194
- Dystrophy, Undescribed, probably of luetic origin, affect-
ing particularly joints of lower extremity, 156
- Dupuytren's contraction, 47
- E**AR, Syphilitic lesions of, 91; Diagnosis of intracranial
complications in diseases of middle, and accessory
sinuses of nose, 92; Mastoiditis and mastoid abscess
without suppuration from middle, and without any
apparent inflammation, 93; Tubercular disease of, 214;
Teeth as a primary factor in disease of, nose and
throat; diagnostic value of coöperation of otologist,
rhinologist, and laryngologist with dentist, 219;
Clinical aspect of tubercular disease of, 329; Intra-
cranial extensions of middle, disease, 443; New treat-
ment of middle, disease, 444; Gold-platinum inserted
in middle, for adhesive processes, 444; Isolation and
cultivation of tubercle bacillus from discharging, in
chronic purulent otitis media, 444; Syphilis of internal,
663
- Echinococcus cyst, Repeated rupture of, of kidney accom-
panied by abortion, 322
- Eclampsia, Sugar content of blood in, 69; acute mania;
caesarean section, 190; New aspects of, and its treat-
ment, 190; Puerperal, 198; Conservative vs. radical
treatment of, 307; Treatment of gestational variety of
puerperal, 314; and its treatment, 643
- Ectopic, Early death from hæmorrhage due to ruptured,
tube, 67; gestation of fourteen years' duration, 67;
Difficulties in diagnosing, pregnancy, 189; pregnancy
twice in same patient within five months, 189; gesta-
tion, 306, 643; Observations on 227 cases of, preg-
nancy 427; ureter, 549
- Ekehorn's operation for prolapse of rectum in children,
493
- Elbow, Fracture of, in childhood, 44; End-results of treat-
ment of one hundred cases of fracture of, immobiliza-
tion in hyperflexion combined with early passive
movements and massage, 276; Fractures in region of,
499
- Electrical methods, Two new, 538
- Electrodes, New, in treatment of gonorrhoea by means of
diathermy, 440
- Electromagnet, Operative removal of bullets and fragments
of grenades, with reference to use of, 58
- Electrotherapeutics, Radiology and, in wartime, 174
- Elephantiasis, Ultimate results of surgical treatment of
lymphœdema of, 407
- Elliot's operation, in glaucoma, 442; Corneoscleral trephine
after, for reduction of intra-ocular tension, 442
- Embolism, Arteriotomy in, 53, 170; Thrombosis and,
170; Operative treatment of arterial thrombosis and,
291

- Embryo, Occurrence of a nine-millimeter human, in margin of full-term placenta, 318
- Embryonal rests, Adenoma tubulare ovarii carcinoma-tosum and relation between tubular ovarian adenoma and, 65
- Empyema, Acute and chronic, 19; of nasal accessory sinuses, 95; of thorax, 253; 367; Treatment of, by irrigation drainage, 369; Treatment of metapneumonic, 369, 600
- Enchondroma, 39
- End-to-end anastomosis of axillary artery, 172
- Endogenous puerperal infection, Spontaneous, 431
- Endometrium, Hypertrophies of, 300; Physiological and pathological changes in, 423; Varicose venous plexus of, 633
- Endoneural injection, Treatment of tetanus by, of anti-tetanus serum and drainage of nerve, 509
- Endoscopic examinations, Report of 4,000 rectal, 147
- Endothelium, Significance of pleural, and its injury, 19
- Enlargement, Permanent, of contracted pelvic outlet, 201
- Epibulbar sarcoma with microscopic and macroscopic sections, 212
- Epididymis, Infections of, with their surgical treatment, 553
- Epididymitis, Acute gonorrhœal, and its treatment, 436
- Epinephrin, Experimental production of lesions, erosions, and acute ulcers in duodenal mucosa of dogs by repeated injections of, 25
- Epithelioma, Intrinsic, of larynx one month after laryngo-fissure, 217; Treatment of, by modern radiation, 517; Röntgen ray, curable by radium, 518; of auricle treated by diathermy, 555; Operation for, of auricle with secondary involvement of glands, 555
- Equinovarus, Result of surgical treatment of a long-standing case of congenital, 160; Operation for congenital, deformity, 615
- Erosions, Experimental production of lesions, and acute ulcers in duodenal mucosa of dogs by repeated injections of epinephrin, 25; Hæmorrhagic, of œsophagus, 139
- Ether, Portable positive-pressure apparatus for administration of, by intratracheal insufflation, 245
- Ether-oil, Thirty-six head and neck operations under, colonic anaesthesia, 247
- Etherometer, a means of mechanical anaesthesia, 474
- Ethmoidal, Unusually large mucocele of frontal and, cells, 216; Blindness incidental to external, operation, 330
- Ethmoiditis, Treatment of, 559
- Eustachian tube, Bacteriology of, 213
- Excision of tongue, 334
- Exclusion of pyloric antrum, 377
- Excochleation, Treatment of congenital club-foot by sub-cutaneous, 400
- Exophthalmic goiter, X-ray treatment of, 136
- Exostoses, Multiple cartilaginous, hereditary deforming chondrodysplasia, 399
- Extension, Treatment of sciatica by continuous, 285
- Extirpation, Tuberculosis of uterus and tubes; total, 62
- Extraperitoneal, Three cases of, caesarean section, 59, 70; operation in stricture of sigmoid colon, 267; caesarean section, for shoulder presentation, 544
- Extra-uterine; pregnancy, Diagnosis and management of, 189; gestation with intra-uterine pregnancy; operation; pregnancy proceeding to term, 643
- Extremities, Osteoplastic operations in, 45; Hyperæmia in post-operative treatment of lesions of, and thorax, 360; Treatment of gunshot injuries of, 415; Threatened and real gangrene of, 498
- Exudates, Character, significance, and prognostic value of peritoneal, 602
- Eye, Removal of, in presence of orbital cellulitis, 89; Prognosis in, injuries, 441; Improved technique in forming support for artificial, 441; Injuries of, in war, 521; First-aid treatment of, injuries, 522
- FACE, Osteoplastic surgery of, 16; Importance of para-nasal sinuses in explanation of pain in, head, neck and shoulders, 95
- Fallopian tube, Congenital absence of left ovary and, 639; Hernias of ovary, of the, and of ovary and fallopian tube, 639
- Familial cancer of stomach, 375
- Fascia lata, Prevention of false keloids in scars by underlining of incisions with strips of, 51; Use of, in operations for fracture of patella, 397
- Fascia, Role of pelvic, as uterine support, 180; Prolapse of rectum treated by transplantation of 385; Transplantation of, to replace intermuscular fascia sheaths, 615
- Faucial tonsil, Bipolar origin of, 560
- Febrile operation, Treatment of, 645
- Feet, Weak, 48
- Female genitalia, Behavior of proteolytic ferments of leucocyte during pregnancy, puerperal diseases and tumors of, 200
- Femoral vein, Injection of salt solution into, during amputation of femur and disarticulation of hip, 500
- Femur, Infected compound fracture of, into knee-joint; treatment by conservative surgery, 45; Fracture of tip of internal condyle of, 45; Typical disease of upper end of, 153; Fractures of, 159; Separation of epiphysis of small trochanter of, 159; Treatment of shell fractures of, 176; Myeloid sarcoma of, with pathological fracture, 273; Treatment of fractures of shaft and neck of, with ambulatory plaster casts, 279; Simultaneous fracture of both, 396; Treatment of fracture of, by means of double angular plaster splint; technique of its application and advantages claimed for it, 396; Amputation for fracture of, in aged, 399; Treatment of gunshot fractures of, by nail extension, 414; Bone-graft peg in treatment of fractures of neck of, 499; Injection of salt solution into femoral vein during amputation of, and disarticulation of hip, 500
- Ferment, Serum proteases and mechanism of Abderhalden reaction; studies on, action, 166; Behavior of proteolytic, of leucocyte during pregnancy, puerperal diseases, and in tumors of female genitalia, 200; Aminolytic, in stomach in carcinoma, 487
- Fertilization, Attempts made at artificial, in human, 199
- Fever, Absorption, or retention, 173
- Fibroid, Unusual uterine, 61; Uterine, menorrhagia and radium, 61; Radium treatment of, tumors, 61; Röntgenotherapy in uterine, and uterine hæmorrhage, 539; X-ray treatment of menorrhagia and uterine, 540; Ovarian, 541
- Fibroma, Chorio-epithelioma malignum complicating a two months' pregnancy and degenerated uterine, 191; Effects of radio-activity upon nasopharyngeal, 557, 665
- Fibromata, Nasopharyngeal sarcoma and two cases of nasopharyngeal, 330
- Fibrous, Effect of radium on, cicatricial band accompanied by neuritis of median, 617
- Fibula, Fracture-dislocation of upper tibia without injury to, 277
- Field, Experiences of German surgeons in, 534; Gunshot injuries of abdomen and early operation in, hospital, 623
- Finger injuries, Celluloid tube in, 273
- First-aid treatment of eye injuries, 522

- Fistulae, Feeding of bile collected from biliary, in obstruction, 388
- Fistula-in-ano, Correct life history of, 493
- Fixation, of simple fractures, 43; Use of indirect or external, in open treatment of fractures, 44; End-results of round ligament, 302
- Flail-joints, Further application of intra-articular silk ligament in, of poliomyelitis paralysis, 159
- Flat-feet, Recognition of rational treatment in care of weak and, 400; Superstition of, high versus low arch as cause of painful symptoms in foot, 161
- Floating kidney, Operative treatment of, 78, 322
- Fluoroscopic bronchoscopy, 481
- Fœtal, heart sound in placenta prævia, 68; Rare, teratisms; symphodia, craniopagus, and acephalus, 77
- Fœtus, Causes which determine lie of, in utero, 653
- Foot, Weak, with reference to treatment, 161; Superstition of flat-foot; high versus low arch as cause of painful symptoms in, 161; Changes of position of, during life and callosities on sole associated with them, 400; Swelling of, and its causes, 400
- Forceps, 309; Tarnier axis traction rods applied to Simpson obstetric, 432; New obstetrical, the "forceps fennica," 654
- Foreign body, in psoas muscle, 41; Unique, in urinary bladder, 325; in bladder, 550; in lungs, diagnosis by blood examination; removal; recovery, 601
- Forlanini's method, Late results of, 480
- Formalin, Use of, in septic wounds and gaseous gangrene, 418
- Förster's operation, Experience with, in Little's disease, 284
- Fracture, Operative treatment of, 42; Fixation of simple, 43; Bone wedging; a method of eliminating introduction of foreign materials in open operation on, 43; of lower end of humerus, with displacement, 44; Complete, of lower third of radius in childhood with greenstick fracture of ulna, 44; Use of indirect or external fixation in open treatment of, 44; of tip of internal condyle of femur, 45; Infected compound, of femur into knee-joint; treatment by conservative surgery, 45; Treatment of compound, 157; Medico-legal features of, 157; Results of some, operations, 158; Abduction treatment of, of clavicle, 158; in neighborhood of joints, 158; about ankle, 159; of femur, 159; Old dislocation of head of radius with, of ulna corrected by Lane bone-plate, 159; Treatment of, of skull at front, 175; Treatment of shell, of femur, 176; Technical aids in treatment of gunshot, of lower extremity, 177; Myeloid sarcoma of femur with pathological, 273; Diagnosis and treatment of some rare, 275; Medico-legal aspect of radiograms in diagnosis and treatment of, and joint injuries, 276; End-results of treatment of one hundred cases of, of elbow; immobilization in hyperflexion combined with early passive movements and massage, 276; of patella; method of retaining fragments in apposition, 277; Treatment of, of patella, 277, 397; dislocation of upper tibia without injury to fibula, 277; Pathology of repair of, of bone with reference to pathology of delayed fracture and non-union, 278; Aluminum skeleton splints in treatment of compound, 278; Open treatment of, 278; Treatment of, of shaft and neck of femur with ambulatory plaster casts, 279; Conservative treatment of, 393; Repair of, 393; Treatment of closed, 394; Treatment of ununited, 394; Operative treatment of, 394, 395; of pelvis, 396; Simultaneous, of both femurs, 396; Treatment of, of femur by means of double angular plaster splint; technique of application and advantages claimed for it, 396; Consideration of, of long bones with reference to operative treatment, 397; Use of fascia lata in operations for, of patella, 397; Amputation for, of femur in aged, 399; Treatment of gunshot, of femur by nail extension, 414; Diagnosis of suppurative arthritis following gunshot, 415; of pelvis with extraperitoneal rupture of bladder, 435; Position of stability in treatment of, 498; Treatment of severe, with stimulating röntgen doses, 498; Treatment of septic compound, and wounds by ionization of salicylate of sodium, 498; Colles', 499; in region of elbow, 499; Bone-graft peg in treatment of, of neck of femur, 499; Useful splint for compound, of leg, 500; Resection of knee to avoid amputation of thigh in, of knee, 524; Important point in treatment of gunshot, 526; Resection in reference to amputation in infected gunshot, of knee-joint, 625; Plating of gunshot, 527; Operative treatment of certain, of lower extremities in children, 614; Treatment of, by autogenous bone transplants, 615; of twelfth dorsal and first lumbar vertebra; laminectomy and results, 616; of patella in military surgery, 625
- French surgery, Contemporary, 630
- Frontal sinus, Unusually large mucocoe of, and ethmoidal cells, 216; External operation of, 330; Tuberculosis of, 558; Pernal operation for, suppuration by anterior route, 96, 331; suppuration; results of new operative procedure, 558
- Fulguration treatment of tumors of bladder, 210, 660
- Function of kidney, Phenolsulphonethylamine method of testing, 80; Renal tests of, 323; Testing, during pregnancy to decide question of inducing abortion, 544
- Funnel pelvis, Dystocia due to, 194
- Furuncle metastasis, 287
- Furunculosis, Treatment of, 287
- GALL-BLADDER, Treatment of infections of, from surgical standpoint, 30; Papillomata of, 150, 386; Cholecystostomy or cholecystectomy in, disease, 387; surgery, 494; End-results of, and gall-duct disease, 610
- Gall-stones, 387; Calcified lymph-gland producing symptoms suggestive of, 30; during the course of 1,066 abdominal sections for pelvic diseases, 31; Reformation, after operation, 33; Röntgen diagnosis of, by improved methods, 150; Chemistry of stomach in, diseases, 387; causing intestinal obstruction and volvulus, 607
- Galvanocautery knife, Use of, for excision of mammary tumors for microscopic diagnosis, 478
- Ganglioneuroma, Neuroblastoma and, of suprarenal body, 320
- Gangrene, of lung after injury by bullet, 138; Futility of arteriovenous anastomosis in treatment of impending, of lower extremity, 172; Formalin in septic wounds and gaseous, 418; of lung from bronchial stones, 481; Threatened and real, of extremities, 498; Treatment of gaseous, 530
- Gangrenous wounds, Treatment of, by free incision, 156
- Gas bacillus, Puerperal infection with, 197
- Gas-pains, 610
- Gas phlegmon, 417, 619; Recognition of, in röntgen plate, 174; Treatment of, in field 178, 179; Wound infection especially tetanus and, 417
- Gastric crises, Surgical treatment of, of tabes, 502
- Gastric glands in Meckel's diverticulum, 490
- Gastric, Diagnostic or prognostic value determined from test-meal examination of patients with, symptoms, 21; and duodenal ulcer; influence of operative procedures on motility and secretion, 263; Influence of removal of adrenals and one-sided thyroidectomy upon, and duodenal mucosa, 343

- Gastric ulcer, 143; Diagnosis and prognosis in, study of 500 consecutive operatively demonstrated cases, 141; Surgical treatment of, with reference to choice of operation, 375; Relationship existing between, and gastric cancer, 485, 604; Chronic, 604
- Gastric and duodenal ulcer, 260, 262; Diagnosis and treatment of, 22; Perforated, 143; influence of operative procedures on gastric motility and secretion, 263; medical cure by efficient removal of gastric juice corrosion, 374
- Gastro-enterostomy, Problems in stomach surgery, effect of, 23; Causes of failure in, 24; Fistulous communications between stomach and colon following, 260; Role of, in treatment of ulcers, 263; Jejunal and gastrojejunal ulcer after, 605
- Gastro-epiploica sinistra, Ligation of splenic, and arteries in surgery of spleen, 611
- Gastro-intestinal, Study of a thousand, cases, 140
- Gastrojejunal ulcers, Röntgenologic and surgical aspects of, 484; Jejunal and, after gastro-enterostomy, 605
- Gastropyloroduodenostomy with excision of ulcer-bearing areas for acute perforated ulcer in pyloric canal, 488
- Genital hæmorrhages in newborn girls, 202; Treatment of, in women, 634
- Genital prolapse, Anterior colporrhaphy and amputation of cervix combined as single operation for use in treatment of, 304
- Gestation, Ectopic, of fourteen years' duration, 67; Ectopic, 306; Fortuitous origin of departures from normal period of, in man, 433
- Glaucoma, Treatment of, 91; Sclerocorneal trephining in, 328; Diagnosis and treatment of simple, 328; Colloidal theory of pathology of, 328, 441; Corneoscleral trephining; new operation for, 442; Elliot's operation in, 442
- Glossitis, Parenchymatous, following resection of septum, 334
- Glycogen content of uterine mucosa, 181
- Goiter, Anæsthesia in, operations, 18; X-ray treatment of exophthalmic, 136; and life expectancy, 365; Operative removal of large intrathoracic, 366; Operative interference in, 366; operation with simplified technique, 477.
- Gold-platinum inserted in middle ear for adhesive processes, 444
- Gonorrhœal, renal infections, 78; Pituitary gland in, arthritis, 392; Acute, epididymitis and its treatment, 436
- Gonorrhœa, in women, 186; Electrodes in treatment of, by means of diathermy, 440
- Grafting, Reconstruction and repair of abdominal organs with intestinal, 389; Heteroplastic, to repair gaps in skull, 521; Mastoid, 556
- Greenstick fracture, Complete fracture of lower third of radius in childhood, with, of ulna, 44
- Gummatous ulceration of bladder, 435, 660
- Gunshot aneurisms and their treatment, 514
- Gunshot fractures, Technical aids in treatment of, of lower extremity, 177; of femur treated by nail extension, 414; Diagnosis of suppurative arthritis following, 415; Important point in treatment of, 526; Plating of, 527; Resection in reference to amputation in certain infected, of knee-joint, 625
- Gunshot injuries, Stab and, of abdomen, 412; of nerves and use of calves' arteries in operating on them, 57; of brain and spinal cord, 175; of peripheral nerves, 178, 529; of extremities, 415; Surgery of, of brain, 521; Operative treatment of, of intestine, 524; Infected, of bones and joints, 526; of lungs, 600; of abdomen and early operation in field hospital, 623
- Gunshot wounds, of head, 56; of intestines, 57; Treatment of infected, of bones and joints, 177; Treatment of abdominal, by compression bandage, 293; Primary suture of, of brain, 410; Early surgical treatment of, of skull, 410; Hæmorrhage after, 411; of hip, 414; Primary suture of, 419; of skull, 520; of thorax, 522; of abdomen, 523; Perforating, of abdomen, 523; Treatment of, of knee-joint, 525; Osteomyelitis of spinal column after, 528; of back, producing paralysis, relieved by laminectomy, 528; Treatment of, by excision and primary suture, 627
- Gynecology, Spinal anæsthesia in, 127; X-ray diagnosis in, with aid of intra-uterine collargol injections, 180; Hypophyseal therapy in, 187; Surgical, 187; past, present, future, 426; Uses of desiccation surgery in, 543
- Gynecological, Therapeutic suggestions for, practice; administration of calcium in inflammatory lesions and extract of true corpus luteum against hæmorrhage, 187; Diathermy in, diseases, 187; Determination of total quantity of cholesterol in blood of pregnant women and of, cases, 201; Intensive mesothorium treatment of, carcinomata, 305; Radium in, practice, 543
- Gynecological operations, upon insane, 66; Preparation for, 640; Sacral anæsthesia, especially in, 642; Anæsthesia in, 642
- Gynecologist's viewpoint, Post-obstetrical pathology from, 202
- H**ÆMANGIO-ENDOTHELIOBLASTOMA of stomach, 141
- Hæmatogenous infection, Acute, of kidney, 205
- Hæmatoma, Unusual, following labor, 197
- Hæmaturia, Etiology of some forms of renal hæmorrhage, usually called either essential, or renal varix, 79
- Hæmocytometer, Principal methods used to standardize bacterins (bacterial vaccines) with reference to use of, 168
- Hæmolytic icterus, Splenectomy for, discussion of familial and acquired types with report of splenectomized cases, 152
- Hæmophilia, Blood and blood-vessels in, and other hæmorrhagic diseases, 510
- Hæmoptysis, Superficial injuries of thorax and, 600
- Hæmorrhage, Hypophysis medication in, of puberty, 62; Early death from, due to ruptured ectopic tube, 67; Plausible etiology of some forms of renal, called either essential hæmaturia, or renal varix, 79; Leucocytosis a deceptive sign in abdominal, 170; Therapeutic suggestions for gynecological practice; administration of calcium in inflammatory lesions and extract of true corpus luteum against, 187; Treatment of post-partum, 197; Genital, in newborn girls, 202; Systemic infections for which tonsil is held responsible and control of, during tonsillectomy, 216; Late, after gunshot wounds, 411; from nose and throat, 557; Condition of uterus in ovarian, 634; Treatment of genital, in women, 634; Unilateral, and unilateral pain of renal origin, 656; Uterine, and after menopause, 301; Arteriosclerosis and control of uterine, 301; Röntgenotherapy in uterine fibroids and uterine, 539; Clinical study of uterine, 540
- Hæmorrhagic, Acute, pancreatitis, 34; Blood and blood-vessels in hæmophilia and other, diseases, 510; diseases in newborn treated by horse serum, 546
- Hæmorrhoids, Angiotribe in, 268; Ligature treatment of, 385; Treatment of, by open method, 149
- Hæmostasis, 290
- Hæmothorax, Pathology and treatment of, in war, 624

- Hand, Choice of incisions in, infections, 41; Arthritis of joints of, following Colles' fracture, 158; Sequelæ of minor injuries incompletely severing nerves of, surgical treatment, 162; Pathogenesis of phlegmons of, 392
- Head, Gunshot wounds of, 56; Importance of paranasal sinuses in explanation of pain in face, neck and shoulders, 95; Ether-oil colonic anaesthesia; report of thirty-six, and neck operations, 247; Operative treatment of, injuries, 362; System of topography for use in radiography of, 408
- Heart, Changes of, and heart muscles during pregnancy, 201; Blood-pressure and viscosity of blood in pernicious vomiting and, disease during pregnancy, 308; Results of nose and throat operations in chronic poisoning of, lungs, kidneys, joints, etc, 332; Injury of, by bursting of grenade; extraction of projectile from right ventricle; recovery, 411; Conservative or operative treatment of, wounds, 411
- Heat, Inoperable uterine carcinoma; a method of applying, in its treatment, 539
- Hemianopia, Bilateral temporary, rapid and permanent recovery of vision after administration of thyroid extract, 90
- Heredity, Influence of, upon occurrence of spontaneous cancer, 505
- Hernia, Operation for radical cure of umbilical, in a patient weighing four hundred and sixty-four pounds, 20; Pathogenesis of umbilical, 372; Radical cure of, 373; Indications and contra-indications for operative and truss treatments of, 373; of ovary, of fallopian tube, and of ovary and fallopian tube, 639
- Heterochromia, Clinical and experimental investigations on etiology of, 555
- Heteroplastic grafts to repair gaps in skull, 521
- Hibernation and pituitary body, 476
- High-frequency current, Experiences with, in vesical tumors, 82
- Hip, Structural changes in congenital, dislocation, 45; Management of convalescent state of, disease, 154; Tuberculosis of, analysis of twenty-five selected cases, 154; Spontaneous dislocation of, 159; Treatment of congenital, dislocation, 397; Gunshot wounds of, 414; Arthritis deformans in subluxation of, 500; Injection of salt solution into femoral vein during amputation of femur and disarticulation of, 500
- Hirschsprung's disease, Treatment of, 383
- Horse serum, Hæmorrhagic disease in newborn treated by, 546
- Horseshoe kidney, Diagnosis of, 547
- Hospital, X-ray work at first western base, 57, 529; Anglo-French, No. 2, Chateau Tourlaville, Cherbourg, 631
- Humerus, Fracture of lower end of, with displacement, 44
- Hydrocephalus internus, 129; Possible relation of contracted pelvis to, developing after birth, 201
- Hydronephrosis, Experimental, 322
- Hydrophthalmos following trauma, 89
- Hyperæmia, Use of, in post-operative treatment of lesions of extremities and thorax, 360
- Hyperemesis, Etiology and treatment of, and other forms of pregnancy toxæmia, 307
- Hypernephroma, Polyglandular syndrome with adrenal, and adenoma of pituitary, 203; Bilateral, with secondary thrombosis of inferior vena cava and terminal uræmia, 205; Multiple pulsating tumors secondary to, 206; Giant calculus of renal pelvis and, 547
- Hypertrophy, of endometrium, 300; of prostate and tumors of prostate, 437
- Hypogastric artery, Carcinoma of uterus four months after ligation of, 60
- Hypophyseal, therapy in gynecology, 187; growth operated through nose and sphenoid, 330
- Hypophysis, medication in hæmorrhages of puberty, 62; Indications and contra-indications for, preparations in obstetrics, 75; Radiotherapy in tumors of, 476
- Hypoplasia, Periodic bleeding from mouth (vicarious menstruation) associated with, of uterus and tubes and aplasia of ovaries and mammary glands, 642
- Hysterectomy, Simplified technique for vaginal, 64; Vaginal, under spinal anaesthesia, 64; Results of sixty abdominal, for cancer of cervix, 209; Vaginal, supplemented by radium therapy for cancer of uterus, 423; Practical observations drawn from 161 cases of, 424; Indications for vaginal, simplified technique used in 84 cases, 424; Importance of destroying cervical mucosa in subtotal, as a cancer-preventing measure, 633
- I**CTERUS, Splenectomy for hæmolytic, discussion of familial and acquired types with report of splenectomized cases, 152; Cause of, neonatorum, 202
- Ileal stasis, Diagnosis and treatment of, 382
- Ileus, Post-operative, and ileus accompanying peritonitis, 25
- Iliac, Ligation of common, artery for iliofemoral aneurism, 290
- Iliohypogastric nerve, Preservation of, in operation for cure of inguinal hernia, 19
- Immobilization, Treatment of wounds and, in war, 627
- Immunity, Mechanism of Abderhalden reaction; studies on, 165
- Implantation, Double and multiple nerve, 285
- Incisions, Choice of, in hand infections, 41
- Inertia, Uterine, and its management, 309
- Infantile uterus, 62; Tendon transplantation in, paralysis, 616
- Infant, Caring for premature, 77; Premature, 202; mortality due to labor, 432
- Infected, wounds of blood-vessels, 171; Treatment for, injuries of soft parts, 272; Open treatment of, wounds, 288; Use of certain antiseptic substances in treatment of, wounds, 622; Treatment of, wounds of knee-joint, 626
- Infections, Gall-bladder, treatment from surgical standpoint, 30; Acute surgical metastatic, with reference to bones, joints, and peri-articular structures, 39; Plaster cast in acute joint, 40; Choice of incisions in hand, 41; Treatment of acute, 55; Gonorrhæal renal, 78; Treatment of acute surgical, 165; Acute hæmatogenous, of kidney, 205; Auto-, 303; Treatment of colon, 383; Organisms which cause, in female pelvis and their paths of entrance, 542; of epididymes, surgical treatment, 533; Chronic intestinal stasis with, from a surgical point of view, 607; Tonsillectomy in adult; is there justification for doing so many indiscriminate tonsillectomies for remote, 667; Etiology of puerperal, 74; Importance of anaerobic bacteria in puerperal, 313; Surgical treatment of puerperal, 315; Spontaneous endogenous puerperal, 431; Puerperal, 650; Etiology and pathology of puerperal pelvic, 650; Wound, new methods for study of various factors which come into consideration in treatment, 297; Prevention and treatment of, in wounds, 417; Wound, especially tetanus and gas phlegmon, 417
- Infiltration, Treatment of sciatica by perineural, with physiological saline solution, 50; Experience derived from first twenty-two cases of vaginal operation performed under parametric, anaesthesia, 186

- Inflammations, Clinical observations on treatment of acute pelvic, 426
- Inguinal hernia, Preservation of iliohypogastric nerve in operation for cure of, 19
- Injuries, Stab and gunshot, of abdomen, 412; of stomach and intestine by infantry bullets, 412; Treatment of abdominal, at the front, 413; Gunshot, of abdomen, and early operation in field hospital, 623; Gunshot, of brain and spinal cord, 175; Surgery of gunshot, of brain, 521; Prognosis in eye, 441; of eye in war, 521; First-aid treatment of eye, 522; Gangrene of lung after, by bullet, 138; Pneumothorax after, of lung in war, 176; Gunshot, of nerves, use of calves' arteries in operating on them, 57; Nerve, caused by bullet wounds 178; War, of peripheral nerves, 294, 416; Operative treatment of, of peripheral nerves in war, 416; Sequelæ of minor, incompletely severing nerves of hand; their surgical treatment, 162; Spinal cord, due to bullets, 178; Treatment for infected, of soft parts, 272; Late results of four cases of operation for, of brachial plexus, 284; Operative treatment of head, 362; Penetrating, of thorax in war, 410; of heart by bursting of grenade; extraction of projectile from right ventricle; recovery, 411; Treatment of gunshot, of extremities, 415; Operative treatment of cord, in the field, 416; Treatment of, by shells, 419; of skull by projectiles, 521; Operative treatment of gunshot, of intestine, 524; Infected gunshot, of bones and joints, 526; Superficial, of thorax and hæmoptysis, 600; of crucial ligaments, 614; Treatment of, of skull in military zone, 623; Operative treatment of, of skull in ambulance at front, 623
- Insane, Gynecological operations upon, 66
- Instrument, Problems in urethrovaginal diagnosis and treatment; description of new, 83
- Internal, Fracture of tip of, condyle of femur, 45; Question of, secretion of uterine mucosa, 62
- Interstitial gland, Studies in regard to nerves of ovary and, 182; and its relation to röntgen castration, 393
- Intestinal, polyposis, 145; Chronic enteric intussusception due to, tumors, 266; Reconstruction and repair of abdominal organs with, grafting, 389; obstruction due to sigmoid volvulus occurring in child, 265; obstruction, 606; obstruction; proteose intoxication, 606; Gall-stone causing, obstruction and volvulus, 607; stasis, bands, kinks, and membranes, 28; Röntgenological aspect of, stasis, 267; Problem of, stasis, 380; Basic considerations in röntgen study of, stasis, 516; Chronic, stasis with infection from surgical point of view, 607
- Intestine, Rupture of, 26; Gunshot wounds of, 57; Ureteral defect repaired with loop of, 81; Röntgen deep irradiation in carcinoma of stomach and, 144; When, where, and how to open bowel in cases of chronic obstruction of large, 146; Injuries of stomach and, by infantry bullets, 412; Torsion of small, resection of eight feet of intestine; recurrence of torsion, 490; Operative treatment of gunshot injuries of, 524
- Ionization, Treatment of bullet and other wounds by, 418; Treatment of septic compound fractures and wounds by, of salicylate of sodium, 498
- Intoxication, Creatin as index of pregnancy, 427
- Intra-articular silk ligament, Further application of, in flail-joints of poliomyelitis paralysis, 159
- Intracranial, Diagnosis of, complications in diseases of middle ear and accessory sinuses of nose, 92; extensions of middle ear disease, 443; Diagnosis of, extension in suppurative otitis, 444
- Intranasal, Experiences with, partial resection of tear sac, 212; Technique of analgesia in, surgery, 560
- Intraneural injection of tetanus antitoxin in local tetanus, 620
- Intra-ocular, Radiotherapy of, tumors, 441; Corneoscleral trephine after Elliot method for reduction of, tension, 442
- Intraspinal administration of antitoxin in tetanus, 508
- Intrathoracic goiters, Operative removal of large, 366
- Intratracheal insufflation, Portable positive-pressure apparatus for administration of ether by, 245
- Intra-uterine, vaccination, 64; Influence of, obstetric maneuvers on morbidity and mortality of parturients, 428
- Intravenous, Combined treatment of carcinoma with mesothorium, röntgen rays, and, injection, 507; isopral-ether anaesthesia in military surgery, 530
- Intravascular treatment, Ureteral calculi; special means of diagnosis and newer method of, 324
- Intussusception, Danger of delay in diagnosis and treatment of, in infancy, 26; Chronic enteric, due to intestinal tumors, 266
- Inversion of uterus, Post-partum, discussion of pathogenesis of obstetrical inversion, 431
- Iridæmia, Complete bilateral, in child whose father has bilateral coloboma of iris, 89
- Iridectomy, Technique of, and performance as preliminary to cataract extraction, 88; Small optical, in lamellar cataract, 88; Cataract extraction with preliminary, irrigation, and discission, 212
- Iris, Complete bilateral iridæmia in child whose father has coloboma of, 89
- Irrigation, Pyelitis of pregnancy treated with pelvic, 193; Treatment of empyema by, drainage, 369
- Ischæmic contracture, Treatment of, 279
- Isopral-ether anaesthesia, Intravenous, in military surgery, 530
- J**AUNDICE, splenic; contribution to surgery of spleen, 269
- Jaws, Mesothelial tumors of, 217
- Jejunal and gastrojejunal ulcer after gastro-enterostomy, 605
- Jejunum, Removal of large tuberculous cyst of mesentery of, together with corresponding segment of bowel, 20; Secondary ulcers of stomach and, 143
- Joint-bodies, Study of, 275; from within present in articulations, otherwise apparently normal, 40
- Joint-mouse, 41
- Joint, Acute surgical metastatic infections with special reference to bones, and peri-articular structures, 39; Plaster cast in acute, infections, 40; Permanent results after operative mobilization of, 46; syphilis in children, 155; Syphilis of, 155; Fractures in neighborhood of, 158; Treatment of infected gunshot wounds of bones and, 177; Medicolegal aspect of radiograms in diagnosis and treatment of fractures and, injuries, 276; Mobilization of ankylosed, 279; Results of nose and throat operations in chronic poisoning of heart, lungs, kidneys, 332; Rarer forms of, disease, 392; Infected injuries of bones and, 526; Damaged pelvic, 496
- Jugular vein, Fulminating otitis media; mastoiditis; extensive sigmoid sinus thrombosis; ligation of internal, recovery, 93
- K**ELOIDS, Prevention of false, in scars by underlining of incisions with strips of fascia lata, 51; Prevention of, in scars, 287
- Keratitis caused by infection with bacillus coli, 555

- Kidney, function in normal and pathological pregnancy, 71; Cortical necrosis of, in pregnancy, 71; Diagnosis and prognosis of, changes during pregnancy, 193; Testing of, during pregnancy to decide question of inducing abortion, 544; Diagnosis and treatment of, tuberculosis in women, 79; Diagnosis and treatment of tuberculosis of, 205; Primary localization and mode of extension of tubercular processes in chronic hæmatogenous tuberculosis, of, 656; Influence of urinary obstruction upon occurrence of pyogenic infection, 78; Dermoids of, 78; Phenolsulphonephthalein method of testing function of, 80; Surgical, and life expectation, 80; Operative treatment of floating, 78; Surgical treatment for floating, 322; Arterial collateral circulation of, 205; Acute hæmatogenous infection of, 205; Pyelography in diagnosis of, lesions, 209; Rupture of echinococcus cyst of, accompanied by abortion, 322; Pelvic, pyonephrosis with stones, 323; Nose and throat operations in chronic poisoning of heart, lungs, joints, etc. 332; Adeno-carcinoma (mesothelioma) of, 434; Irritation of, from novocaine anaesthesia, 547; Diagnosis of horseshoe, 547; Therapeutic value of cortical substance of, 548; Cancer of bladder and, 551; Recurrence of stone in, after operation, 655; Malformation of, from surgical point of view, 655
- Killian-Hirsch operation, Sarcoma of pituitary body treated by, 135; Post-mortem specimen of pituitary cyst opened by, 136
- Kimpton-Brown tube, Blood transfusion by means of the, 495
- Kinetic system, 53
- Kinks, Intestinal stasis, bands, and membranes, 28
- Knee, Suppurative arthritis of, in military surgery, 294; Resection of, to avoid amputation of thigh in fracture of, 425
- Knee-joints, Infected compound fracture of femur into, treatment by conservative surgery, 45; Tuberculosis of, in childhood, 154; Tuberculosis of right, 275; Operative mobilization of ankylosed, 398; Treatment of gunshot wounds of, 525; Amputation in infected gunshot fractures of, 625; Shrapnel wounds of, 625; Infected wounds of, 626
- Kulenkampf, Anaesthesia of brachial plexus according to method of, 14; By and after effects of, plexus anaesthesia, 595
- Kuzmik-Schede method, Treatment of varices of lower extremity by, 407
- L**ABOR, Rupture of uterus during, 194; Pituitrin in 30 cases of, 195; Novocaine anaesthesia in normal, 196; Hæmatoma following, 197; Scopolamine-morphine treatment in, 311; Scopolamine and narcophine seminaresis during, 311; Scopolamine-narcophine anaesthesia (twilight sleep) in, 312; Infant mortality due to, 432
- Labyrinthitis following operation for atresia, 443
- Lachrymal sac, Method of destroying, in chronic dacryocystitis, 212
- Lactation, Incision of breast abscesses during, 597
- Lactic acid douches, Prophylaxis of puerperal fever by, during pregnancy, 650
- Laminectomy, Gunshot wound of back producing paralysis relieved by, 528; in cases with bullets lodged in spinal cord, 528; Fracture of twelfth dorsal and first lumbar vertebrae, and results, 616
- Lane bone plate, Dislocation of head of radius with fracture of ulna corrected by, 159; Autogenous bone-grafts versus, 398
- Langenbeck operation, Nasal flap and modified, for cleft-palate, 562
- Laparotomy, Acute dilatation of stomach during, 377; in abdominal injury, 413; in tubercular peritonitis, 602
- Laryngeal, papillomata in children, 217; obstruction, 333; Treatment of, tuberculosis, 447
- Laryngopharynx, Infective lymph growths of, secondary to sinus suppuration, 96
- Laryngoscopy, Suspension, 217
- Larynx, Intrinsic epithelioma of, one month after laryngofissure, 217; Condition of, and trachea in stillborn infant, 654; Papilloma of, 668
- Lateral sinus, Spontaneous rupture of, with general septicaemia in ulcerating sinusitis, 95
- Leather-bottle stomach, 484
- Leg, Method of forcible traction on, while applying plaster casts, 279; Usefulness of ventral decubitus in, amputations, 279; Useful splint for compound fractures of, 500
- Lens, Annular opacity of, following penetrating wound into vitreous chamber, 663
- Leucocyte count, Normal differential, proposed classification of white blood-cells, 169
- Leucocytosis a deceptive sign in abdominal hæmorrhage, 170
- Leucorrhœa, 185; Treatment of, 186
- Life expectation, Surgical kidney and, 80; Goiter and, 395
- Ligation, Vascular, in the tonsillar fossa, 561
- Ligature treatment of hæmorrhoids, 385
- Limbs, Traumatic lesions of nerves of, 161
- Lipæmia retinalis, 89
- Lipoma of maxillary antrum, 447
- Lithiasis, Urinary, 439; Pitfalls in diagnosis of renal, 655
- Little's disease, Förster's operation in, 284
- Liver, Disturbance of, during pregnancy, 646; Atrophy in nurslings and congenital lesions of, in newborn, 77; Primary carcinoma of, operation for recurrence, 386
- Local anaesthesia, Prostatectomy under, 326; of abdominal cavity, 362
- Lower extremity, Dystrophy affecting particularly joints of, 156; Reversal of circulation in, 171; Arteriovenous anastomosis in treatment of impending gangrene of, 172; Aids in treatment of gunshot fractures of, 177; Treatment of varices of, by Kuzmik-Schede method, 407; Operative treatment of certain fractures of, in children, 614
- Luetic, Dystrophy probably of, origin, affecting particularly joints of lower extremity, 156
- Lumbar plexus, Attempts at anaesthetizing, 401
- Lung, Gangrene of, after injury by bullet, 138; Exploration of thorax with primary mobilization of, 138; Immobilization and shrinkage of, by one-sided phrenic nerve resection and influence upon experimental pulmonary tuberculosis, 138; Pneumothorax after injuries of, in war, 176; Results of nose and throat operations in chronic poisoning of heart, kidneys, joints, 332; Fence staple in, method of bronchoscopic removal, 369; Gangrene of, from bronchial stones, 481; Gunshot injuries of, 600; Foreign body in, diagnosis made by blood examination, 601
- Lymphangioma and radium, 408
- Lymphatic drainage of peritoneal sac, 139
- Lymph-gland, Calcified, producing symptoms suggestive of gall-stones, 30; Röntgen treatment of, tuberculosis, 292
- Lymphoedema, Results of surgical treatment, of elephantiasis, 407
- Lymphoid growths, Infective, of laryngopharynx secondary to sinus suppuration, 96

- M**ADELUNG'S deformity of the wrist, 281
Magnesium sulphate, Use of, in treatment of tetanus, 403
Malformation of kidney from surgical point of view, 655
Malignancy, Value of radium supplemented by cross-fire röntgen rays in treatment of, 519
Malignant diseases, Precancerous lesions and transition types of, of tongue, and relation to syphilis, 219; Treatment of, by X-rays, 292; Plastic surgery in treatment of, 402; Early recognition of, bladder and prostate, operative therapy, 551
Malignant tumors, Presence of continued high temperature in, 162; Radiotherapy of, of internal organs, 175; Modern radiotherapy in, and localized tuberculosis, 175; Treatment of, with tumor extract, 404; Modern radiotherapy of, 517; Results of operations for, of breast, 597; Medical aspects of recurrent, 618
Mammary, Galvanocautery knife for excision of, tumors for microscopic diagnosis, 478; Periodic bleeding from mouth (vicarious menstruation) associated with hypoplasia of uterus and tubes and aplasia of ovaries and glands, 642
Mandible, Resection of bone for protrusion of, 363
Mania, acute, Eclampsia, caesarean section, 190
Mastoid, abscess, Method of aborting middle-ear inflammation and infection leading to, 663; Idiopathic, 664; grafting, 556; After-treatment of, wound 556; Post-mortem specimen of radical, operation performed six months before death, 213; End results of radical, operation, 445; Pyrexia after, operation for acute otitis media, 556
Mastoiditis, Fulminating otitis media, extensive sigmoid sinus thrombosis, ligation of internal jugular vein, recovery, 93; and mastoid abscess without suppuration from middle ear or ear inflammation, 93; Latent, with sinus thrombosis, 213; Anatomical consideration of, 445; Interesting case of, 445; Primary acute, 555; Atypical, 556; Early diagnosis of, 664
Maxillary antrum, Inflammatory disease of, diagnosis and treatment, 560; Lipoma of, 447
McDonald's solution, Sterilization of skin by, 473
Meckel's diverticulum, Gastric glands in, 490
Median, Neuroplasty of, and ulnar nerves, 51
Mediastinal thyroid removed by transsternal mediastinotomy, 251
Meiostagmin reaction with warmed sera, 404
Ménière's disease, 91; Operation for, 556
Meningitis, Ambulant otitic, 444; Acute purulent, drainage of meninges, 596
Menopause, Uterine hæmorrhage at and after, 301
Menorrhagia, Uterine fibroids, and radium, 61; X-ray treatment of, and uterine fibroids 540
Menstrual disorders, Removal of uterus instead of ovaries for incurable, 635
Mental disturbances, Post-operative nervous and, 289
Mesenteric thrombosis, 257
Mesentery, Removal of tuberculous cyst of, of jejunum with segment of bowel, 20
Mesothelial tumors of jaws, 217
Mesothelioma, Adenocarcinoma of kidney, 434
Mesothorium, Intensive, treatment of gynecological carcinomata, 305; Treatment of carcinoma with, röntgen rays, and intravenous injection, 597
Metal plates used to repair skull defects, 363
Metapneumonic empyema, Treatment of, 369, 600
Metastasis, Furuncle, 287; Choroiditis, 442
Microscopic diagnosis, Galvanocautery knife for excision of mammary tumors for, 478
Middle ear, Operations for chronic sinus, tonsillar, adenoid and chronic diseases of, 215; Method of aborting, inflammation and infection leading to mastoid abscesses, 663
Mikulicz's disease, 172
Military hospital, Surgery in, 532
Military surgery, 530; Treatment of suppurative arthritis of bone in, 294; Intravenous isopral-ether anæsthesia in, 530; Mistakes in, and how to avoid them, 533; Fracture of patella in, 625; Naval and, 629
Miscarriage with prolonged retention of placenta, 306
Mobilization, Results after operative, of joints, 46; Operation of rib, in treatment of phthisis, 137; Exploration of thorax with primary, of lung, 138; of ankylosed joints, 279; Operative, of ankylosed knee-joints, 398
Morbidity, Influence of intra-uterine obstetric maneuvers on, and mortality of parturients, 428
Morphine-scopolamine anæsthesia in obstetrics, 430
Mortality, of abdominal surgery, 35; Influence of intra-uterine obstetric maneuvers on morbidity and, of parturients, 428; Infant, due to labor, 432
Motherhood, Endowment of, 76
Motor disturbances, Post-partum, 313
Mouth, Cancer of tongue and floor of, 448; Cancer of, 561; Mucocele of frontal and ethmoidal cells, 216
Muscles, Neurotization of paralyzed, 613
Muscular advancement operation, 328; atrophy, 614
Myelomeningocele, Spina bifida with, removal of, and closure of spinal cleft by transplantation of animal bone, 49
Myoma and pregnancy, 191
Myositis, Röntgen ray diagnostic factor in, ossificans circumscripta, 272
Myxoma of rhinopharynx, 665
NAIL extension, 157; Treatment of gunshot fractures of femur by, 414
Narcotics, Influence of preliminary, on induction, maintenance and after-results of anæsthetics, 245; Combined antitoxin and, treatment of tetanus, 403
Narcophin, Scopolamine and, seminarcosis during labor, 311
Nasal accessory sinus, Empyema of, 95; Trifacial neuralgia from, disease, 215; Skiagraphic diagnosis of, 333; Radiography in diagnosis of diseases of, 558; Treatment of, disease, 559
Nasal deformity, corrected by bone transplantation, 446; Depressed, resulting from submucous operation, 332
Nasal, Posterior, operation by means of nasopharyngoscope, 94; treatment of dysmenorrhœa, 180; Congenital bony occlusion of right, choana, 331; Tuberculosis of, fossæ, 332; septum and pathology of deflections, 332; septum, 557; flap and modified Langenbeck operation for cleft palate, 562; Hyperplastic sphenoiditis, vidian nerves and, ganglion, 665
Nasopharyngeal, sarcoma and fibromata, 330; Acute articular synovitis of cryptic, origin, 496; Effects of radio-activity upon, fibroma, 557, 665
Nasopharyngoscope, Posterior nasal operation by means of, 94
Naval and military surgery, 629
Neck, Diagnosis and indications for treatment of tumors of, 16; Ether-oil colonic anæsthesia, report of head and, operations, 247
Necrosis, Symmetrical cortical, of kidney in pregnancy, 71
Neoplasms, Radium versus surgery in treatment of vesical, 659
Nephrectomy, Procedures following, 208; during pregnancy, 428; Complications originating in stump of ureter after, for tuberculosis and treatment, 653
Nephrolithiasis, 321; Probable left, with passage of small calculi causing urethritis, 547

- Nerve, Preservation of iliohypogastric, in operation for inguinal hernia, 19; Neuroplasty of median and ulnar, 51; Gunshot injuries of, and use of calves' arteries in operating, 57; Anatomical and clinical study of traumatic lesions of, of limbs, 161; Surgical treatment of injuries incompletely severing, of hand, 162; injuries caused by bullet wounds, 178; of the ovary and interstitial gland, 182; Decompression operations in diseases of optic, 213; Closure of, gaps by means of tubules, 285; Double and multiple, implantation, 285; suture for bullet wounds, 529; Hyperplastic sphenoiditis, nasal ganglion and vidian, 665; Treatment of gunshot injuries of peripheral, 178; Injuries of peripheral, during war, 294; Treatment of peripheral, wounded in war, 295; Operative findings in gunshot wounds of peripheral, 296; Operative treatment of injuries of peripheral, in war, 416; War injuries of peripheral, 416; Gunshot injuries of peripheral, 529
- Nervous, Post-operative, and mental disturbances, 289
- Neuralgia, Trifacial, from nasal and accessory sinus disease, 215; Cystalgia, urethralgia, syndrome vesical and urethral, 552
- Neuritis, Effect of radium on fibrous cicatricial band accompanied by, of median, 617
- Neuroblastoma and ganglioneuroma of suprarenal body, 320
- Neuroplasty of median and ulnar nerves, 51
- Neurotization, of paralyzed muscles, 613
- Newborn, Haemorrhagic disease in, treated by horse serum, 546; Congenital syphilis among, 653;
- New-growths, Trauma and, 508
- Nipple and allied conditions, Paget's disease of, 596
- Nitrous-oxide, gas analgesia in obstetrics, 195, 430; oxygen anoci-association in practice, 246; anaesthesia in obstetrics, 312
- Non-coagulable nitrogen coefficient of blood serum in pregnancy and toxemia of pregnancy, 190
- Non-malignant lesions, Röntgentherapy in deep-seated, 518
- Non-union, Pathology of repair of fracture of bone and, 278
- Nose, Diagnosis of intracranial complications in diseases of middle ear and accessory sinuses of, 92; Scopolamine in, and throat operations, 94; Plastic operation for dislocated columnar cartilage of, 96; Teeth as primary factor in diseases of ear, and throat, 219; Hypophyseal growth operated through, and sphenoid, 330; and throat operations in chronic poisoning of heart, lungs, kidneys, joints, 332; Corrective and cosmetic surgery of, 446; Non-operative treatment of disease of accessory sinuses of, 447; Haemorrhage from, and throat, 557
- Novocaine anaesthesia, in normal labor, 196; Irritation of kidney from, 547
- Noxious gases, Poisoning by, 628
- O**BSTETRICS, 72; "Twilight sleep" in, 74; Indications and contra-indications for hypophysis preparations in, 75; Nitrous-oxide anaesthesia in, 312; forceps, 428; Unusual cases of, 433; Points on, 546; Observations upon the use of pituitary extract in, 546
- Obstruction, When, where and how to open the bowel in cases of chronic, of the large intestine, 146; Anuria due to unilateral calculous, 320; Visceral stasis, mechanical, and their effects, relievable by rational measures, 492; Intestinal, 606; Prostatic, without hypertrophy, 662
- Occipital region, Shrapnel wound of the, with involvement of the visual centers, 663
- Occiput posterior positions, 309
- Occlusion, of the pylorus, 364; Congenital bony, of the right nasal choana, 331; Diagnosis and treatment of arteriomesenteric, in a child, 374
- Odontomata, Cystic, 97
- Oesophageal diverticulum; a new operation for its cure, 482
- Oesophagus, Haemorrhagic erosions of the, 139; Topographical anatomy of, 253; Perforation of, by septic infection, 253; Operative treatment of carcinoma of, 254; Suppuration of bronchial glands with perforation into, 481; Simple inflammatory stenosis of, 481
- Omentum, inflammatory tumors of, 20
- Opacity, Annular, of the lens following a penetrating wound into the vitreous chamber, 663
- Open method, Treatment of haemorrhoids by, 149.
- Operation, Prevention of discomfort after, 14; for epithelioma of the auricle with secondary involvement of glands, 555
- Opsonic index, Pyoculture and, 621
- Optic, Experimental study of the specificity of the protective ferments by, method, 290; Decompression operations in diseases of, nerves, 213
- Orbital cellulitis, Removal of eyes in the presence of, 89
- Organisms which cause infection in the female pelvis and their paths of entrance, 542
- Organotherapy in amenorrhoea, 635
- Orthopedic, Importance of vascular condition in, cases, 281; surgery, 281, 500; technique, 500
- Ortison and ortison pencils in the treatment of wounds, 407
- Os calcis, Subperiosteal osteotomy of, for pes calcaneus, 48
- Osteo-arthritis, Treatment of rheumatoid, of the hypertrophic type, 275; Operative treatment of, 612
- Osteoclasts, The origin and fate of, 391
- Osteomalacia, Puerperal, 198; with a tumor of the parathyroid gland, 478
- Osteomyelitis, Treatment of, 38; Surgical treatment of acute, 39; Primary acute and subacute, of the spinal column, 49; The physician's responsibility in acute, 153; of the spinal column after gunshot wound, 528; Subacute and chronic, 611
- Osteoplastic, surgery of the face, 16; operations on the extremities, 45
- Osteotomy, Subperiosteal, of the os calcis for pes calcaneus, 48
- Ostitis fibrosa, Generalized, with tumors and cysts, 612
- Otitic meningitis, Ambulant, 444
- Otitis, Causation and diagnosis of suppurative, 213; Difficulties in diagnosis of intracranial extension in suppurative, 444
- Otitis media, Fulminating; mastoiditis; extensive sigmoid sinus thrombosis; ligation of internal jugular vein; recovery, 93; Isolation and cultivation of the tubercle bacillus from the discharging ear in cases of chronic purulent, 444; Treatment of acute, by the general practitioner, 445; Pyrexia after mastoid operation for acute, 556
- Otology, The newer therapeutics in, 664
- Otorhinology, The relation of pathological conditions in, to general medicine and surgery, 91
- Otosclerosis, The röntgenographic diagnosis in, 329
- Ovarian, Adenoma tubulare ovarii carcinomatosum and the relation between the tubular, adenoma and the embryonal rests, 65; tumors in pregnancy; case of solid tumor, 70; transplantation, 302; carcinoma in a child aged eleven, 425; fibroids, 541; Condition of the uterus in, haemorrhage, 634; Complications of, tumors, 638; Ruptured, pregnancy, 643
- Ovariectomy, Delivery after conservative, 542; during pregnancy, 647
- Ovary, An active substance in, and placenta, 65; Sarcoma of, 182; Studies in regard to the nerves of, and especially of the interstitial gland, 182; Sarcoma of both, in a child of three years, 183; Transplantation of, in the

- human, 183; Conservative operation on, 302; Removal of the uterus instead of, for incurable cases of menstrual disorders, 635; Study of hernias of, of the fallopian tube, and of the ovary and fallopian tube, 639; Congenital absence of left, and fallopian tube, 639; Early cystic degeneration of, 639; Periodic bleeding from the mouth (vicarious menstruation) associated with hypoplasia of uterus and tubes and aplasia of, and mammary glands, 642
- Oxygen, Subcutaneous injection of, as a treatment for tetanus, 165
- Ozæna, *Coccobacillus foetidus ozænæ* perez vaccine in the treatment of, 94
- P**AGET'S disease of nipple and allied conditions, 596
- Pain, Mitigating, and accelerating delivery in parturition, 73; Paranasal sinuses in explanation of, in face, head, neck and shoulders, 95; Hæmorrhage and, of renal origin, 656
- Palate, Treatment of congenital defects of, 562; Partial paralysis of, following removal of tonsils and adenoids, 562
- Palsy, Birth, 318
- Pampiniform plexus, Varicosities of, 326
- Pancreatic, secretion, 33; Diagnosis of carcinoma of bile and, ducts, 494
- Pancreatitis, Acute hæmorrhagic, 34; Acute, 268, 389; Chronic, 495
- Pansinusitis, exclusive of external operations, 665
- Papillary or villous tumors of bladder, Diagnosis and treatment of, 550
- Papilloma, of gall-bladder, 150, 386; Laryngeal, in children, 217; Diagnosis of tumors of bladder, with reference to, and carcinoma, 658; of larynx, 668
- Paralysis, Tendon-fixation for deformity resulting from partial, 46; Pott's paraplegia with complete, lasting five years, recovery, 284; Stoffel's operation in spastic, 285; Gunshot wound of back producing, relieved by laminectomy, 528; Partial, of soft palate following removal of tonsils and adenoids, 562
- Paralyzed muscles, Direct and muscular neurotization of, 613
- Parametric infiltration anæsthesia, Vaginal operations performed under, 186
- Parametritis, Treatment of chronic posterior, by colpeurynter massage and shortening of round ligaments, 425
- Paranasal sinuses in explanation of pain in face, head, neck and shoulders, 95
- Parathyroid gland, Osteomalacia with tumor of, 478
- Parenteral digestion of albumin in relation to obstetrics and gynecology, 317
- Parturients, Influence of intra-uterine obstetric maneuvers on morbidity and mortality of, 428
- Parturition, Suggestions for mitigating pain and accelerating delivery in, 73 Tubercular infection complicating pregnancy, and puerperal state, 192
- Patella, Treatment of fractures of, 277, 397; Fascia lata in operations for fracture of, 397; Bone-graft wedge in treatment of habitual dislocation of, 615; Fracture of, in military surgery, 625
- Pelvic, Gallstones in abdominal sections for, diseases, 31; Uterine prolapse with associated, relaxation, 63; Treatment of second degree of, contraction, 72; Role of, fascia as uterine support, 180; Enlargement of contracted, outlet, 201; Treatment of acute, inflammations, 426; Damaged, joints, 496; Cancer of female, organs, 542; Varicocele, 640; Etiology and pathology of puerperal, infections, 650
- Pelvimeter, Description of new outlet, 545
- Pelvis, Dystocia due to funnel, 194; Hydrocephalus, possible relation of contracted, 201; Coxalgic, 303; Fracture of, 396; Fracture of, with extraperitoneal rupture of bladder, 435; Organisms which cause infection in female, and paths of entrance, 542; Statistics of frequency of funnel, 545
- Penis, Cancer of, 661
- Peptic ulcer, X-ray diagnosis of, 260; Medical treatment of, 485
- Percy cautery, Use of, in carcinoma uteri with reference to use as forerunner to Wertheim operation, 300
- Perforation, of œsophagus by septic infection, 253; of uterus in abortion, 646
- Pericolonic, Colonic and, abnormalities, 146
- Perienteritis membranosa, 483
- Perineal prostatectomy, 437
- Perinephritic abscess, 548
- Perineural infiltration, Treatment of sciatica by, with physiological saline solution, 50
- Periosteal regeneration of bone, 390
- Periosteum, Relation of, to bone vitality, 38; Osteogenic power of, 495
- Peripheral nerves, Gunshot injuries of, 178, 529; Injuries of, during war, 294; Treatment of, wounded in war, 295; Operative findings in gunshot wounds of, 296; Operative treatment of injuries of, in war, 416; War injuries of, 416
- Peritoneal, Lymphatic drainage of, sac, 139; Prevention of post-operative adhesions in, cavity, 140; Character, significance, and prognostic value of, exudates, 602
- Peritonitis, Post-operative ileus and ileus accompanying, 25; Sequence of pathological changes in acute appendicitis and appendicular, 145; Diffuse septic, 370; Treatment of acute diffuse, 372; Cryptogenic, 482; Laparotomy in tubercular, 602; Prognostic sign in acute suppurative, 601
- Pernal operation for frontal sinus suppuration, 96, 331
- Perniciious anemia, Splenectomy in primary, 34
- Perthe's disease, Typical disease of upper end of femur, 153
- Pharynx, Tumor of, terminating in sarcoma, 668
- Phenolsulphonephthalein method of testing function of kidney, 80
- Phlegmon, Recognition of gas, in röntgen plate, 174; Gas, on the field, 178; Treatment of gas, in the field, 179; Pathogenesis of, of the hand, 393; Gas, 417, 619
- Phlegmonous duodenitis, 489
- Phrenic nerve, Immobilization and shrinkage of lung by means of one-sided, resection, its influence upon experimental pulmonary tuberculosis, 138; Shoulder pain—referred, symptom—in acute surgical diseases of abdomen, 274
- Phthisis, Rib mobilization in treatment of, 137
- Physiological saline solution, Treatment of sciatica by perineural infiltration with, 50
- Pituitary, Influence of anterior lobe of, body upon growth of carcinomata, 52; Sarcoma of, body treated by Killian-Hirsch operation, 135; Hibernation and, body, 476; Post-mortem specimen of, cyst opened by Killian-Hirsch operation, 136; extract in uterine bleeding, 180; extract in obstetrics, 195, 546; Polyglandular syndrome with adrenal hypernephroma and adenoma of, 203; gland in gonorrhoeal arthritis, 392; extract in obstetrics and gynecology, 651
- Pituitrin, in labor, 195; in obstetrical work, 318; Should vasoconstrictors (adrenalin), be used in emergencies, especially in surgical shock, 403
- Placenta, Miscarriage with prolonged retention of, 306; Nine-millimeter human embryo in margin of full-term, 318; Sarcoma of, 545; Active substance in ovary and, 65

- Placenta praevia, Etiology, pathology and diagnosis of, 67;
Foetal heart sounds in, 68; Treatment of, 68, 188, 306;
Advantages of external version in treatment of, 188;
Series of, cases, 427
- Plaiting round ligaments, 184
- Plasma and blood volume in pregnancy, 651
- Plaster cast, in acute joint infections, 40; Method for forcible traction on leg while applying, 279; Treatment of fractures of shaft and neck of femur with ambulatory, 279; Dangers of and substitute for, 395
- Plaster splint, Treatment of fracture of femur by double angular, 396
- Plastic operation, for dislocated columnar cartilage of nose, 96; Tendon, for paralytic club-foot, 282; for Buoy cheek cancer, 476; on the cheek, 595
- Plastic, surgery in treatment of malignant diseases, 402; Clinical experience with, drainage for ascites, 482
- Plates, Metal, used to repair skull defects, 363
- Plating of gunshot fractures, 527
- Pleural endothelium, Significance of, 19
- Plexus anaesthesia, By and after effects of Kulenkampff's, 595
- Pneumococcal infection, Destruction of vulva and tissues probably due to, 185
- Pneumothorax, after injuries of lung in war, 176; treatment of pulmonary tuberculosis, 367; Artificial, 598; Recurrent, 590
- Poisoning with chloroform and other alkyl halides, 475
- Poliomyelitis, Medical treatment of anterior, 47; Diagnosis, symptomatology and pathology of, anterior acute, 47; Prophylaxis and orthopedic management of anterior, 47; Application of intra-articular silk ligament in flail joints of, paralysis, 159
- Polyglandular syndrome with adrenal hypernephroma and adenoma of pituitary gland, 203
- Polypoid, of colon and multiple benign and malignant adenoma limited to sigmoid flexure of colon, 28; Intestinal, 145
- Positive pressure apparatus for administration of ether by intratracheal insufflation, 245
- Posterior positions, Occiput, 309
- Post-obstetrical pathology from gynecologist's viewpoint, 202
- Post-operative, ileus and ileus accompanying peritonitis, 25; Prevention of, adhesions in peritoneal cavity, 140; nervous and mental disturbances, 289
- Post-partum, Treatment of, hæmorrhage, 197; retrodisplacement of uterus, 302; motor disturbances, 313; inversion of uterus, 431
- Pott's paraplegia, 284
- Precancerous, lesions and transition types of malignant disease of tongue in relation to syphilis, 219; conditions, 504
- Pregnancy, Method for diagnosis of, 199; Abderhalden's dialysis in diagnosis of, 199; Investigations conducted with aid of Abderhalden's dialysis reaction during, and in other gynecological affections including cancer, 200; Abderhalden's reaction of, method and specificity; investigations on healthy women post and premenstrually, 200; Serum studies in, 431, 651; Blood-pressure during, 76; Significance of non-coagulable nitrogen coefficient of blood serum in, and toxæmias of, 190; Determination of total quantity of cholesterol in blood in, and in gynecological cases, 201; Blood-pressure and viscosity of blood in pernicious vomiting and heart-disease during, 308; Influence exerted upon, by dietetic and medicinal means and analyses in regard to alkalinity of blood, 315; Plasma and blood volume in, 651; Diagnosis and management of extra-uterine, 189; Difficulties in diagnosing ectopic, 189; Ectopic, twice in same patient within five months, 189; Two hundred and twenty-seven cases of ectopic, 427; Treatment of toxæmias of later, 307; Treatment of hyperemesis and other forms of, toxæmias, 307; Relation of albuminuric retinitis to toxæmias of, 643; Kidney function in normal and pathological, 71; Symmetrical cortical necrosis of kidney in, 71; Diagnosis and prognosis of kidney changes during, 193; Pyelitis in, 193; Pyelitis of, treated with pelvic irrigation, 193; Pyelitis as complication of, and puerperium, 193; Nephrectomy during, 428; Functional testing of kidneys during, 544; Old and infected abdominal, with extension of long bones into bladder and bowel, 67; Ovarian tumors in, 70; Ruptured appendix at full-term, 71; Isochronic heterotopic twin, 189; Chorio-epithelioma malignum complicating a two months', and degenerated uterine fibroma, 191; Myoma and, 191; Method of interruption of, and simultaneous sterilization in pulmonary tuberculosis, 191; Multiple fibroids of uterus complicated by, 191; Tubercular infection complicating, parturition, and puerperal state; treatment, 192; Relationship of tuberculosis and, 192; Rupture of bowel due to blunt force during, 192; Behavior of proteolytic ferments of leucocyte during, puerperal diseases and in tumors of female genitalia, 200; Changes of heart and heart muscles during, 201; Clinical significance of amenorrhœa in diagnosis of tubal, 307; Dermatoses of, 309; Creatin as index of, intoxication, 427; Transparency of abdominal walls in, 428; Ruptured ovarian, 643; Extra-uterine gestation with intra-uterine, operation; pregnancy proceeding to term, 643; Disturbance of liver function during, 646; Thyroid in, 646; Psychoses and neuroses of, and puerperium, 646; Surgical operations during, 647; Ovariectomy during, 647; Prophylaxis of puerperal fever by lactic acid douches during, 650
- Premature infant, 77, 202
- Prenatal work, Blood-pressure during pregnancy, etc., 76
- Prickle-cell and basal-cell skin cancers, 162
- Proctoscopic examinations, New position for, 384
- Projectile wounds, Early treatment of, by excision of damaged tissues, 418; Injuries of skull by, 521
- Prolapse, Uterine, with associated pelvic relaxation, 63; of uterus, 424, 636; Pathogenesis and treatment of, of rectum, 147; of the rectum treated by transplantation of fascia, 385; Ekehorn's operation for, of rectum in children, 493
- Prostate, Calculus in vesiculæ seminales in man with enlarged, 85; Gross anatomy of human, gland and contiguous structures, 85; Cancer of, 86, 436; Arteriosclerosis with relation to, operations, 326; Hypertrophy and tumors of, 437; Malignant disease of bladder and, 551; Cysts of, 553; Surgical pathology of, 553; Calculi of, 661
- Prostatectomy under local anaesthesia, 326; Spinal anaesthesia in, 326; Perineal, 437; Suprapubic, 662
- Prostatic, obstructions and vesical atony, 86; surgery, 438; obstruction without hypertrophy, 662
- Proteases, Serum, and mechanism of Abderhalden reaction, 166
- Protective ferments, Specificity of, by optic method, 290
- Proteolytic ferments of leucocyte during pregnancy, puerperal diseases, and tumors of female genitalia, 200
- Protease intoxication, 606
- Pryor method of treatment for puerperal septicæmia, 314
- Psoas muscle, Foreign body in, 41
- Psychoses and neuroses of pregnancy and puerperium, 646
- Ptois, Visceral, 35

- Puberty, Hypophysis medication in hæmorrhage of, 62
 Pubiotomy, Effect of, upon subsequent labors, 544
 Puerperal, eclampsia, 198; Treatment of gestational variety of, eclampsia, 314; Alcohol drain treatment of, fever, 314; Prognosis of, fever, 545; Prophylaxis of, fever by lactic acid douches during pregnancy, 650; Etiology of, infection, 74; infection with gas bacillus, 197; Anaerobic bacteria in, infection, 313; Surgical treatment of, infection, 315; Spontaneous endogenous, infection, 431; infection, 650; Etiology and pathology of, pelvic infections, 650; Treatment of, sepsis, 313; Surgical experience in, sepsis, 314; Tubercular infection complicating pregnancy, parturition and, state, 192; Prophylaxis of, convulsions, 197; osteomalacia, 198; Ligation of vena cava in, pyæmia, 199; Proteolytic ferments of leucocyte during pregnancy, tumors of female genitalia and, diseases, 200; Pryor method of treatment of, septicæmia, 314
 Puerperium, Pyelitis as complication of pregnancy and, 193; Psychoses and neuroses of pregnancy and, 646
 Pulmonary artery, Bronchi ectasis treated by ligature of branch of, 253
 Puncture of corpus callosum according to Bramann, 248
 Pyæmia, Ligation of vena cava in puerperal, 199
 Pyelitis, Chronic, 80; as complication of pregnancy and puerperium, 193; in pregnancy, 193; of pregnancy treated with pelvic irrigation, 193; Operative treatment of chronic recurrent colon, 207; in the young, 434; Acute, 549
 Pyelography, 208; New preparation for, 208; Value of, in diagnosis of kidney lesions, 209
 Pyelonephritis complicated by adenocarcinoma and chyluria, 548
 Pyloric, Congenital, tumor, 24; Exclusion (functional) of, antrum, 377; Exclusion of, antrum for ulcer, 605
 Pylorus, Occlusion of, 264; Exclusion of, and treatment of ulcer of duodenum, 265
 Pyoculture, Criticism of, 407; and opsonic index, 621
 Pyogenic kidney infection, Influence of urinary obstruction upon occurrence of, 78
 Pyonephrosis with stone, 323
 Pyorrhoea alveolaris, 563; as cause of systemic disturbances, 563
 Pyrexia after mastoid operation for acute otitis media, 556
 Pyuria, Diagnosis and surgical treatment of, 438
- R**ABIES, Serodiagnosis of, 167
 Radiation, Treatment of epithelioma by modern, 517
 Radio-active substances, Secondary rays in röntgen deep therapy as substitute for, 174
 Radio-activity, Effects of, upon nasopharyngeal fibroma, 557, 665
 Radiograms, Medicolegal aspect of, in diagnosis and treatment of fractures and joint injuries, 276
 Radiography, Safe technique in renal, 204; System of topography for use in, of head, 408; in diagnosis of diseases of accessory nasal sinuses, 558
 Radiology and electrotherapeutics in wartime, 174
 Radiotherapy, of malignant tumors of internal organs, 175; in malignant tumors in localized tuberculosis, 175; Results of, 293; Combined, of carcinoma of uterus and breast, 301; of intra-ocular tumors, 441; in tumors of hypophysis, 476; Modern, of malignant tumors, 517; Operable carcinoma of uterus treated by, 632
 Radium Institute, Work at, London, in 1914, 55
 Radium, Uterine cancer and, 59; treatment of uterine and vaginal cancer, 59; Uterine fibroids, menorrhagia, and, 61; Vaginal hysterectomy supplemented by, therapy for cancer of uterus, 423; Treatment of inoperable uterine cancer by combined, and röntgen therapy, 423; Uterine carcinoma treated by, 538; Cancer of uterus apparently cured by, 632; treatment of cancer of cervix of uterus, 632; treatment of fibroid tumors, 61; Status of, therapeutics, 304; in cancer of bladder, 325; Lymphangioma and, 408; Cancer destruction by, 516; Röntgen-ray epithelioma, curable by, 518; Value of, supplemented by cross-fire röntgen rays in treatment of malignancy, 519; Treatment of advanced carcinoma of cervix with, 538; in gynecological practice, 543; Effect of, on fibrous cicatricial band accompanied by neuritis of median, 617; and röntgen rays in treatment of cancer, 623; versus surgery in treatment of vesical neoplasms, 659
 Radius, Complete fracture of lower third of, in childhood with greenstick fracture of ulna, 44; Old dislocation of head of, with fracture of ulna corrected by Lane bone-plate, 159
 Reconstruction, Developmental, of colon, 383
 Rectal endoscopic examinations, Four thousand, 147
 Rectovaginal septum, Adenomyoma of, 66
 Rectum, Operation for stricture of, or sigmoid, 29; Pathogenesis and treatment of prolapse of, 147; Major procedure first in two-stage operation for relief of cancer of, 268; Early diagnosis of cancer of, 384; Prolapse of, treated by transplantation of fascia, 385; Ekehorn's operation for prolapse of, in children, 493
 Reduction, Gradual, of skin lesions, 402
 Regeneration, Periosteal, of bone, 390
 Renal, Gonorrhœal, infections, 78; Etiology of some forms of, hæmorrhage, 79; Silence of, tuberculosis, 80; Technique in, radiography, 204; cancer associated with renal stone, 204; functional tests, 323; Giant calculus of, pelvis, and hypernephroma, 547; Pitfalls in diagnosis of, lithiasis, 655; Tests of, permeability, 657
 Resection, Intranasal partial, of tear sac, 212; Parenchymatous glossitis following, of septum, 334; of bone for protrusion of mandible, 363; of cardia for carcinoma, 370; One hundred and eighty-three cases of stomach, 376; of knee to avoid amputation of thigh in fractures of knee, 524; in reference to amputation in infected gunshot fractures of knee-joint, 625
 Retention, Absorption fever or, fever, 173; Miscarriage with prolonged, of placenta, 306
 Retinalis, Lipæmia, 89
 Retinitis, Relation of albuminuric, to toxæmias of pregnancy, 643
 Retrodisplacement of uterus, 64; Movable, 181; Post-partum, 302
 Retroversion, Chronic fixed, of uterus; plea for operation, 182
 Rheumatoid arthritis, Treatment of, of hypertrophic type, 275
 Rhinological operations, Cause of failure of, 446
 Rhinopharynx, Myxoma of, 665
 Rhinoplasty, Total, 446
 Rib mobilization in treatment of phthisis, 137
 Rollier treatment for so-called surgical tuberculosis, 391
 Röntgen, deep irradiation in carcinoma of stomach and intestine, 144; Secondary rays in, deep therapy as a substitute for radio-active substances, 174; Present status of, deep therapy, 174; Recognition of gas phlegmon in, plate, 174; Typical, pictures of carcinoma of stomach, 264; ray of diagnostic factor in myositis ossificans circumscripta, 272; treatment of lymph-gland tuberculosis, 292; Production of sterility by, ray, 293; Interstitial gland and its relation to, castration, 303; ray examination of accessory sinuses, 409; Treat-

- ment of inoperable uterine cancer by combined radium and, therapy, 423; Treatment of severe fractures with stimulating, doses, 408; Combined treatment of carcinoma with mesothorium, rays, and intravenous injection, 507; Basic considerations in, study of intestinal stasis, 516; Technique of, ray massive dose for treatment of deep-seated carcinoma, 517; ray epithelioma, curable by radium, 518; Value of radium supplemented by cross-fire, rays in treatment of malignancy, 519; Radium and, rays in treatment of cancer, 623
- Röntgen diagnosis, of lesions of vermiform appendix, 145; of gall-stones by improved methods, 150; of surgical diseases of stomach and duodenum, 488
- Röntgenographic diagnosis in otosclerosis, 329
- Röntgenological, aspect of intestinal stasis, 267; Gastrojejunal ulcers; their, and surgical aspects, 484
- Röntgenotherapy in uterine fibroids and uterine hæmorrhage, 539; in deep seated non-malignant lesions, 518
- "Rosenbach," Treatment of surgical tuberculosis with tuberculin, 391
- Röth-Dräger apparatus, Anæsthesia with description of, 594
- Round ligament, Plaiting the, 184; End-results of, fixation, 302; Treatment of chronic posterior parametritis by colpeurynter massage and shortening of, 425
- Rupture, of intestine, 26; Early death from hæmorrhage due to, of ectopic tube, 67; of appendix at full-term pregnancy, 71; Spontaneous, of lateral sinus with general septicæmia in ulcerating sinusitis, 95; Complete, of uterus during labor, 194; of pregnant uterus through scar of former cesarean section, 308; Repeated, of echinococcus cyst of kidney accompanied by abortion, 322; of biceps flexor cubiti, 392; Fracture of pelvis with extra-peritoneal, of bladder, 435; of ovarian pregnancy, 643
- SACRAL** anæsthesia in gynecological operations, 642
- Sacro-iliac strain, 304
- Salivary glands, Primary actinomycosis of, 248
- Salpingitis, Tuberculous, with unusual toxic symptoms, 542; Operative treatment of, 640
- Salt solution, Injection of, into femoral vein during amputation of femur and disarticulation of hip, 500
- Sarcoma, Inoperable angiofibroma; maxillary antral, 95; of pituitary body treated by Killian-Hirsch operation, 135; Efficiency of mixed toxins in inoperable, 167; of ovary, 182; of both ovaries in child of three years, 183; Epibulbar, with microscopic and macroscopic sections, 212; Myeloid, of femur with pathological fracture, 273; Nasopharyngeal, and nasopharyngeal fibromata, 330; of breast, 480; Generalized non-pigmented, of skin, 504; of placenta, 545; Tumor of pharynx eventually terminating in, 668
- Scapulæ, Results of surgical treatments for flexed, 366
- Scars, Prevention of false keloids in, by underlining of incisions with strips of fascia lata, 51; Prevention of keloids in, 287
- Schlatter's disease, 498
- Sciatica, Treatment of, by perineural infiltration with physiological saline solution, 50; Treatment of, by continuous extension, 285; Nature and treatment of, 401; Operative treatment of, 503
- Sclerocorneal trephining in glaucoma, 328
- Sclerostomy, Histological findings after successful, 90
- Scoliosis, Abbott's, treatment, 283; Operative treatment of severe, 283; Correction of, 283; Treatment of, 502
- Scopolamine, in nose and throat operations, 94; seminarcosis, 127
- Scopolamine-morphine, treatment in labor, 311; amnesia as employed at Long Island College Hospital, 311; cocaine anæsthesia in surgery, 361
- Scopolamine-narcophine, seminarcosis during labor, 311; anæsthesia, 312
- Secondary, rays in röntgen deep therapy as substitute for radio-active substances, 174; Technique for late, amputations in war injuries, 528
- Secretion, Pancreatic, 33
- Seminal vesiculitis, Surgical treatment of, 436
- Seminarcosis, Scopolamine, 127; Scopolamine and narcophine, during labor, 311
- Sensitized bacillary emulsion, Tuberculin in surgical tuberculosis with reference to use of, 509
- Separation of epiphysis of small trochanter of femur, 129
- Sepsis, Treatment of puerperal, 313; Surgical experience in puerperal, 314
- Septal deformities, Method of correcting, 558
- Septic, Perforation of œsophagus by, infection, 253; Management of, conditions in abdominal cavity, 271; Diffuse, peritonitis, 370; Formalin in, wounds and gaseous gangrene, 418
- Septicæmia, Spontaneous rupture of lateral sinus with general, in ulcerating sinusitis, 95; Pryor method of treatment for puerperal, 314
- Septum, Parenchymatous glossitis following resection of, 334; Nasal, 557
- Serodiagnosis of rabies, 167
- Serological findings in 100 cases, bacteriological findings in 50 cases, resumé of 679 cases of abortion at Michael Reese Hospital, 308
- Serum, Abderhalden's, reaction, 75; proteases and mechanism of Abderhalden reaction, 166; Tetanus and antitetanic, complications and late death in tetanus, 289; Meiotagmin reaction with warmed, 404; studies in pregnancy, 431, 651
- Shell fractures, Treatment of, of femur, 176
- Shells, Treatment of injuries by, 419
- Shock, Should vasoconstrictors (adrenalin, pituitrin) be used in emergencies, especially in surgical, 403; Avoidance of, during surgical operations, 475; anoci-association and anæsthesia, 595
- Shortening round ligaments, Treatment of chronic posterior parametritis by colpeurynter massage and, 425
- Shoulder, Traumatic forward subluxation of, 45; Importance of paranasal sinuses in explanation of pain in face, head, neck and, 95; disability; study of its varieties and treatment, 273; pain—referred phrenic nerve symptom—in acute surgical diseases of abdomen, 274; Extra-peritoneal cesarean section for, presentation, 544
- Shrapnel wound of occipital region with involvement of visual centers, 663
- Sigmoid, Polyposis of colon and multiple benign and malignant adenoma limited to flexure of, colon, 28; New operation for stricture of rectum or, 29; Intestinal obstruction due to, volvulus occurring in child, 265; Rare congenital abnormality of, 608
- Silver foil in surgery, 245
- Simpson obstetric forceps, Tarnier axis traction rods applied to, 432
- Sinus, Exploratory opening of sphenoid, 94; Importance of paranasal, in explanation of pain in face, head, neck and shoulders, 95; External operation of frontal 330; Intracranial complications in diseases of middle ear and accessory, of nose, 92; Empyema of nasal accessory, 95; Skiagraphic diagnosis of nasal accessory, 333; Röntgen ray examination of accessory, 409; Non-operative treatment of disease of accessory, of nose, 447

- Sinus disease, Ultimate results of operations for chronic, chronic tonsillar and tonsillar and adenoid disease, and chronic diseases of middle ear, 215; Trifacial neuralgia from nasal and accessory, 215; Treatment of nasal accessory, 559
- Sinus suppuration, Pernal operation for frontal, by anterior route, 96; Infective lymphoid growths of laryngopharynx secondary to, 96; Pernal operation for frontal, 331; Frontal, results of new operative procedure, 558
- Sinus thrombosis, Fulminating otitis media; mastoiditis; extensive sigmoid, ligation of internal jugular vein; recovery, 93; Factors concerned in cases of atypical, 127; Latent mastoiditis with, 213
- Sinusitis, Spontaneous rupture of lateral sinus with general septicæmia in ulcerating, 95
- Skiagraphic diagnosis of nasal accessory sinuses, 333
- Skin, Gradual reduction of, lesions, 402; Sterilization of, by McDonald solution, 473; Cancer of, 503; Generalized non-pigmented sarcoma of, 504
- Skull, Treatment of fractures of, at front, 175; Fractures of, by tangential shots, 409; Early surgical treatment of gunshot wounds of, 410; Gunshot wounds of, 520; Injuries of, by projectiles, 521; Treatment of injuries of, in military zone, 623; Operative treatment of injuries of, in ambulance at front, 623; Metal plates to repair, defects, 363; Covering gaps in, with bone from sternum, 363; Heteroplastic grafts to repair gaps in, 521
- Spastic paralysis, Stoffel's operation in, 285
- Sphenoid, Exploratory opening of, sinus, 94; Hypophyseal growth operated through nose and, 330
- Sphenoiditis, Hyperplastic, and clinical relations to second, third, fourth, fifth, sixth, and vidian nerves and nasal ganglion, 665
- Spina bifida, with myelomeningocele; removal of myelomeningocele and closure of spinal cleft by transplantation of animal bone, 49; tibial transplant; father to child, 282; Operation in, occulta, 283
- Spinal, Vaginal hysterectomy under, anæsthesia, 64; anæsthesia in gynecology, 127; anæsthesia in forty-three suprapubic prostatectomies, 326; anæsthesia, 362; Recent experiences in, surgery, 401
- Spinal column, Primary acute and subacute osteomyelitis of, 49; Osteomyelitis of, after gunshot wound, 528
- Spinal cord, Gunshot injuries of brain and, 175; injuries due to bullets, 178; Possibility of preventing decubitus in wounds of, 204; Laminectomy for bullets in, 528
- Spinatus tendons, Histopathology of calcification of, as associated with subacromial bursitis, 497
- Spleen, Abscess of, 151; Cavernous angioma of, 269; Splenic jaundice; surgery of, 269; Pathology of, removed for abnormal conditions of blood, 270; Ligation of splenic and gastro-epiploica sinistra arteries in surgery of, 611
- Splenectomy, in primary pernicious anæmia, 34; Surgical considerations of, 151; Clinical notes on, 152; for hæmolytic icterus, 152
- Splenic, jaundice, 269; abscess, 611; Ligation of, and gastro-epiploica sinistra arteries in surgery of spleen, 611
- Splenomegaly, Classification and analysis of clinical types of, accompanied by anæmia, 610
- Splint, Aluminum skeleton, in treatment of compound fractures, 278; for compound fractures of leg, 500
- Spondylitis, Albee's operation for, 283
- Stasis, Intestinal, bands, kinks, and membranes, 28; Röntgenological aspect of intestinal, 267; Problem of intestinal, 380; Diagnosis and treatment of ileal, 382; Visceral, mechanical obstructions and their effects relievable by rational measures, 492; Chronic intestinal, with infection, from surgical point of view, 607
- Steno's duct, Technique for operations on, 247
- Stenosis, Simple inflammatory, of œsophagus, 481
- Sterility, Production of, by röntgen ray, 293; in women, 540
- Sterilization, of unfit by vasectomy, 84; Extraperitoneal displacement of tubes as method of, 184; Interruption of pregnancy and simultaneous, in pulmonary tuberculosis, 191; of skin by McDonald method, 473
- Sternum, Covering gaps in skull with bone from, 363
- Stillborn infant, Condition of larynx and trachea in, 654
- Stoffel's operation in spastic paralysis, 285
- Stomach, Problems in, surgery, 23; Hæmangio-endothelioblastoma of, 141; Syphilis of, 141, 603; Secondary ulcers of, and jejunum, 143; Passage of fluid through body of human, 260; Fistulous communications between, and colon following gastro-enterostomy, 260; resection, 376; Visible acute dilatation of, during laparotomy, 377; Chemistry of, in gall-stone disease, 387; Injuries of, and intestine by infantry bullets, 412; Leather-bottle, 484; Röntgen ray diagnosis of surgical diseases of, and duodenum, 488
- Stomach cancer, Histogenesis of, 143; Familial, 375; Early diagnosis of, 486, 605
- Stomach carcinoma, 375, 485; Röntgen deep irradiation in, 144; Association of round ulcer with, 144; Typical röntgen pictures of, 264; Surgery for, 487; Aminolytic ferment in, 487
- Stone, Renal cancer associated with renal, 204; Ureteral, technique of removal by cystoscopic methods, 209; Pelvic kidney; pyonephrosis with, 323; Ureteral, with reference to pelvic ureter, 434; Frequency of recurrence of, in kidney after operation, 655
- Strabismus, Indications for operation of, 443
- Strain, Sacro-iliac, 304
- Stricture, New operation for, of rectum or sigmoid, 29; Treatment of urethral, by excision, 83; Extraperitoneal operation in, of sigmoid colon, 267; of ureter, 324
- Stump, treatment in appendectomy, 27; Weight-bearing, 399
- Subacromial bursitis; its pathogenesis and rational operative treatment, 156; Histopathology of calcification of spinatus tendons as associated with, 497
- Subcutaneous symphyseotomy, 429
- Subglottic growth, 334
- Subluxation, Traumatic forward, of shoulder, 45; Arthritis deformans in, of hip, 500
- Submucous operation, Depressed nasal deformity resulting from, 332
- Subsequent labors, Effect of pubiotomy upon course of, 544
- Sugar content of blood in eclampsia, 69
- Suppurating wounds, Treatment of, with ultraviolet rays, 173
- Suppuration of bronchial glands with perforation into œsophagus, 481
- Suppurative, Causation and diagnosis of, otitis, 213; Treatment of, arthritis of knee in military surgery, 294; Diagnosis of, arthritis following gunshot fractures, 415; Prognostic sign in acute, peritonitis, 601
- Suprapubic, Spinal anæsthesia in forty-three, prostatectomies, 326; prostatectomy simplified, 662
- Suprarenal body, Neuroblastoma and ganglioneuroma of, 320
- Surgery of blood-vessels, 514
- Surgical tuberculosis, Tuberculin in, 509
- Suspension laryngoscopy, 217; Treatment of varicocele with, of testicle, 661
- Suture, Primary, of gunshot wounds of brain, 410; Primary, of gunshot wounds, 419
- Suturing, Improved method of, flaps in amputation of cervix, 290; Aneurisms in war, with reference to, vessels, 411

- Sweat-gland tumors of vulva, 542
 Symphyseotomy, Subcutaneous, 429
 Synechia and contraction of vestibules, 332
 Synovitis, Acute articular, of cryptic nasopharyngeal origin, 496; New procedure for cure of chronic, 496
 Syphilitic lesions of ear, 91
 Syphilis, of joints, 155; Joint, in children, 155; Precancerous lesions and transition types of malignant disease of tongue and their relation to, 219; Congenital, among newborn, 653; of internal ear, 663; of stomach, 141, 603
 Systemic, infections for which tonsil is held responsible and control of hæmorrhage during tonsillectomy, 216; Pyorrhæa alveolaris as cause of, disturbances, 563
- T**ABES, Surgical treatment of gastric crises of, 502
 Tangential shots, Fractures of skull by, 409
 Tarnier, James, traction rods applied to Simpson obstetric forceps, 432
 Tarsus, Arrested development of carpus and, 161
 Tear sac, Intranasal partial resection of, 212
 Teeth as primary factor in disease of ear, nose, and throat, 219
 Temperature, High, in malignant tumors, 162; Alcohol drain treatment of puerperal, 314
 Temporal bone, Specimens of tuberculosis of, 128
 Temporosphenoïdal abscess with unusual complications, 447
 Tendon-fixation for deformity resulting from partial paralysis, 46
 Tendon, transplantation, 280; plastic operation for paralytic club-foot, 282; transplantation in infantile paralysis, 616
 Teratisms, Rare foetal, 77
 Testicle, Chorio-epithelioma of, 436; Treatment of varicocele with suspension of, 661
 Testis, Treatment of undescended, 84; Cancer of, 552
 Test-meal examination of patients with gastric symptoms, 21
 Tests of renal permeability, 657
 Tetanus, Prognosis and treatment of, 164; Subcutaneous injection of oxygen as treatment for, 165; and antitetanic serum, 289; Statistics on, 402; Magnesium sulphate in treatment of, 403; Combined antitoxin and narcotic treatment of, 403; Wound infection, especially, and gas phlegmon, 417; Intraspinal administration of antitoxin in, 508; Treatment of, by endoneural injection of antitetanus serum and drainage of nerve, 509; Intraneural injection of tetanus antitoxin in local, 620; Late, 620; Clinical and therapeutical experience with, 620
 Tetany of mother, 201
 Therapeutic abortion; indications and methods of procedure, 70
 Thigh, Resection of knee to avoid amputation of, in fractures of knee, 524
 Third ventricle, Tumor of, 463
 Thoracoplasty in pulmonary tuberculosis, 600
 Thorax, Exploration of, with primary mobilization of lung, 138; Empyema of, 253, 367; Hyperæmia in post-operative treatment of lesions of extremities and, 360; Penetrating injuries of, in war, 410; Gunshot wounds of, 522; Immediate symptoms of penetrating wounds of, 600; Injuries of, and hæmoptysis, 600
 Throat, Scopolamine in nose and, operations, 94; Teeth as primary factor in disease of ear, nose, and, 219; Results of nose and, operations in chronic poisoning of heart, lungs, kidneys, joints, 332; Hæmorrhage from nose and, 557; Acute infectious inflammations of, 666
 Thrombo-angiitis, Vasomotor and trophic disturbances of upper extremities, with particular reference to, obliterans, 54
 Thrombosis, Factors concerned in atypical sinus, 127; and embolism, 170; Bilateral hypernephroma with secondary, of inferior vena cava and terminal uræmia, 205; Latent mastoiditis with sinus, 213; Mesenteric, 257; Operative treatment of arterial, and embolism, 291
 Thyroid, Bilateral temporary hæmianopia; rapid and permanent recovery of vision after administration of, extract, 90; Surgical anatomy of, gland, 136; Disease of, gland, 136; Mediastinal, removed by trans-sternal mediastinotomy, 251; Complement-fixation in, diseases, 477; Relation of tonsil, to gland, 560; in pregnancy, 646
 Thyroidectomy, Influence of removal of adrenals and one-sided, upon gastric and duodenal mucosa, 434
 Tibia, Fracture-dislocation of upper, without injury to fibula, 277
 Tibial transplant, Spina bifida, father to child, 282
 Tissues, Influence of changes in chemical environment on life and growth of, 52
 Tongue, Cavernous angioma of, 219; Precancerous lesions and transition types of malignant disease of, and relation to syphilis, 219; Excision of, 334; Cancer of, and floor of mouth, 448
 Tonsil, Systemic infections for which, is held responsible, 216; Relation of, to thyroid gland, 560; surgery, 561; Partial paralysis of soft palate following removal of, and adenoids, 562; Surgical anatomy of so-called capsule of faucial, 667
 Tonsillar, Ultimate results of operations for chronic sinus disease, chronic, and adenoid disease, 215; Vascular ligation in, fossa, 561
 Tonsillectomy, Control of hæmorrhage during, 216; in children, 217; in adult, 667
 Topography for use in radiography of head, 408
 Torsion of small intestine, 490
 Torticollis, 17
 Toxæmia, Significance of non-coagulable nitrogen coefficient of blood serum in pregnancy and, of pregnancy, 190; Treatment of, of later pregnancy 307; Etiology and treatment of hyperemesis and other forms of pregnancy, 307; Relation of albuminuric retinitis to, of pregnancy, 643
 Toxins, Mixed, in inoperable sarcoma, 167
 Trachea, Condition of larynx and, in stillborn infant, 654
 Tracheal, Sublottic, growth, 334
 Tracheotomy, Importance of early, 369
 Trachoma, Surgical treatment of, 328
 Traction, Method for forcible, on leg while applying plaster casts, 279
 Transparency of abdominal walls in pregnancy, 428
 Transfusion, Blood, by means of Kimpton-Brown tube, 405; Blood, by citrate method, 511; Blood, general management, 511
 Transplantation, Removal of myelomeningocele and closure of spinal cleft by, of animal bone, 49; of ovaries, 183, 302; Tendon, 280; Bone, 280; Prolapse of rectum treated by, of fascia, 385; of entire bones with joint surfaces, 398; Nasal deformity corrected by bone, 446; Osteogenic power of periosteum; bone, 495; of fascia to replace intermuscular fascia sheaths, 615; Tendon, in infantile paralysis, 616
 Transplants, Treatment of fractures by autogenous bone, 615; Spina bifida; tibial, father to child, 282
 Transportation of wounded, 628
 Trauma, Hydrophthalmos following, 89; and new-growths, 508

- Traumatic, forward subluxation of shoulder, 45; lesions of nerves of limbs, 161; Principles of operative treatment of, cerebral lesions, 249; Acute, displacement of uterus, 301; Operation in, aneurism, 406; aneurisms, 406
- Trephining, Palliative, upon choked disc, 128; Sclero-corneal, in glaucoma, 328; Corneoscleral, 442
- Trifacial neuralgia from nasal and accessory sinus disease, 215
- Trochanter, Separation of epiphysis of small, of femur, 159
- Trophic disturbances, Vasomotor and, of upper extremities, with reference to thrombo-angiitis obliterans, 54
- Truss, Indications and contra-indications for operative and, treatments of hernia, 373
- Tubal pregnancy, Clinical significance of amenorrhœa in diagnosis of, 307
- Tubercle bacilli, Significance of, in urine, 327; Cultivation of, from discharging ear in chronic purulent otitis media, 444
- Tubercular, infection complicating pregnancy, parturition, and puerperal state, 192; disease of ear, 214, 329; Simple laparotomy in, peritonitis, 602
- Tuberculin in surgical tuberculosis, 509
- Tuberculosis, of uterus and tubes, 62; Treatment of kidney, in women, 70; Silence of renal, 80; of temporal bone, 128; Immobilization and shrinkage of lung by means of one-sided phrenic nerve resection and influence upon experimental pulmonary, 138; of knee-joint in childhood, 154; of hip, 154; Radiotherapy in malignant tumors and localized, 175; Abortion in pregnancy and simultaneous sterilization in pulmonary, 191; and pregnancy, 192; Diagnosis and treatment of, of kidney, 206; Secondary auditory, in adult, 213; of auditory apparatus, 214; of right knee-joint, 275; Röntgen treatment of lymph-gland, 292; of auditory apparatus treated by permanent drainage of lateral ventricle, 329; of nasal fosse, 332; Pneumothorax treatment of pulmonary, 367; Operative treatment of pulmonary, 368; Rollier treatment for so-called surgical, 391; Treatment of surgical, with tuberculin "Rosenbach," 391; Treatment of laryngeal, 447; Treatment of surgical, at low altitudes, 496; of frontal sinus, 558; Thoracoplasty in pulmonary, 600; Complement-fixation test in surgical, 613; of adnexa, 639; Primary localization and mode of extension of tubercular processes in chronic hæmatogenous, of kidney, 656; Complications originating in stump of ureter after nephrectomy for, and their treatment, 658
- Tuberculous, Treatment of, cervical adenitis, 17; Removal of, cyst of mesentery of jejunum together with corresponding segment of bowel, 20; salpingitis with unusual toxic symptoms, 542
- Tubes, Tuberculosis of uterus and, 62; Extraperitoneal displacement of, as method of sterilization, 184; Periodic bleeding from mouth associated with hypoplasia of uterus and, and aplasia of ovaries and mammary glands, 642
- Tumor of bladder, 550; Soft, 82; Fulguration treatment of, 210; Unusual, 435; Papillary or villous, 550; Pathological diagnosis of, 658; Surgical treatment of, 660; Desiccation treatment of, 660; Fulguration treatment of, 660
- Tumor of brain, Results of operations for, 16; Treatment of, 248; Pathology of, 363
- Tumors, Indications for treatment of, of neck, 16; Inflammatory, of omentum, 20; Congenital pyloric, 24; Radium treatment of fibroid, 61; Ovarian, in pregnancy, 70; High-frequency current in vesical, 82; High temperature in malignant, 162; Chemotherapy and, 163; Radiotherapy of malignant, of internal organs, 175; Radiotherapy in malignant, and localized tuberculosis, 175; Proteolytic ferments of leucocyte during pregnancy, puerperal diseases, and in, of female genitalia, 200; Multiple pulsating, secondary to hypernephroma, 206; Mesothelial, of jaws, 217; Chronic enteric intussusception due to intestinal, 266; Protecting large blood-vessels in extirpating, 360; of third ventricle, 364; Treatment of malignant, with tumor extract, 404; Hypertrophy of prostate and, of prostate, 437; Radiotherapy of intra-ocular, 441; Incision of, for diagnosis, 472; Radiotherapy in, of hypophysis, 476; Osteomalacia with, of parathyroid gland, 478; Radiotherapy of malignant, 517; Sweat-gland, of vulva, 542; Results of operations for malignant, of breast, 597; Generalized otitis fibrosa with, and cysts, 612; Operation for primary, of bodies of vertebrae, 617; Recurrent malignant, 618; Complications of ovarian, 638; of pharynx terminating in sarcoma, 668
- Twilight sleep, 74, 196, 310, 312, 649
- Twin pregnancy, Isochronic heterotopic, 189
- Two-stage operation for relief of cancer of rectum, 268
- Typhoid, abscesses, 407; Appendicitis and, 607
- ULCER, Duodenal, 606; Positive diagnosis of, 25; Exclusion of pylorus and treatment of, 265; Chronic, 378; Retroperitoneal perforation of, 379; from surgical standpoint, 489
- Ulcer, Experimental production of lesions, erosions, and acute, in duodenal mucosa of dogs by injections of epinephrin, 25; Secondary, of stomach and jejunum, 143; Carcinoma with round, of stomach, 144; X-ray diagnosis of peptic, 260; Gastro-enterostomy in treatment of, 263; Bladder, in women, 325; Experimental production of lesions, erosions, and acute, 434; Gastrojejunal, their röntgenologic and surgical aspects, 484; Medical treatment of peptic, 485; Gastropyloroduodenostomy with excision of ulcer-bearing areas for acute perforated, in pyloric canal, 488; Jejunal and gastrojejunal, after gastro-enterostomy, 605; Exclusion of pyloric antrum for, 605
- Ulcer, Gastric, 143; Diagnosis and prognosis in, 141; Surgical treatment of, 375; Etiologic relationship existing between, and cancer, 485, 604; Chronic, 604
- Ulcer, Gastric and duodenal, 260, 262, 263, 374; Diagnosis and treatment of, 22; Perforated, 143
- Ulceration of bladder, Gummatous, 435
- Ulna, Old dislocation of head of radius with fracture of, corrected by Lane bone-plate, 159
- Ulnar nerves, Neuroplasty of the median and, 51
- Ultraviolet rays, Treatment of suppurating wounds with, 173
- Umbilical hernia, Operation for radical cure of, 20; Pathogenesis of, 372
- Undescended testis, Treatment of, 84
- Upper extremities, Vasomotor and trophic disturbances of, 54
- Uræmia, Bilateral hypernephroma with secondary thrombosis of inferior vena cava and terminal, 205
- Ureter, Urinary calculus in pelvic portion of, 204; Stricture of, 324; Giant calculus of, 549; Ectopic, 549; Complications originating in stump of, after nephrectomy for tuberculosis, 658
- Ureteral, defect repaired with loop of intestines, 81; stones, removal by cystoscopic method, 209; calculi, diagnosis and methods of intravesical treatment, 324; stone, 434; Insufficiency at, junction, 658
- Uretero-enteric anastomosis, 209
- Urethral stricture by excision, Treatment of, 83
- Urethralgia, syndrome of vesical and urethral neuralgia, 552

- Urethritis, Left nephrolithiasis with passage of small calculi lodging in urethra causing, 547
- Urethrovaginal diagnosis and treatment, 83
- Urinary, Influence of, obstruction upon occurrence of pyogenic kidney infection, 78; Soft tumor of, bladder, 82; antiseptics, 87; Bacteriology of, tract in children, 210; Recent work in, surgery, 327; Modern urological methods in diagnosis of surgical conditions of, tract, 438; lithiasis, 439; Chemical composition of, calculi, 554
- Urine, Significance of tubercle bacilli in, 327; Source of blood in, 554
- Urobilinuria, Diagnostic value of, in surgery, 509
- Urological, methods in diagnosis of surgical conditions of urinary tract, 438; Preparatory treatment for, operations, 440
- Urology, Anesthesia in, 14
- Uterine, Internal secretion of, mucosa, 62; prolapse with associated pelvic relaxation, 63; Pelvic fascia as, support, 180; Pituitary extract in, bleeding, 180; Glycogen content of, mucosa, 181; Chorio-epithelioma malignum complicating a two months' pregnancy and degenerated, fibroma, 191; Relief of, inertia, 194; inertia and its management, 309; hæmorrhage at and after menopause, 301; Arteriosclerosis and control of, hæmorrhage, 301; Clinical study of, hæmorrhage, 540
- Uterine cancer, Radium treatment of, 59; Cure of, by curetting for diagnosis, 59; Early diagnosis of, 59; and radium, 59; Radium in treatment of, 59; Vaginal hysterectomy supplemented by radium therapy for, 423; Education of public to early recognition of, 423; Treatment of inoperable, by combined radium and röntgen therapy, 423; Limitations of radical operation for cervical, 537; Surgical treatment of, 537; apparently cured by radium, 632; Radium treatment of cervical, 632; Prophylactic treatment and early diagnosis of, 632; Treatment of, in small hospital, 633
- Uterine carcinoma, Specimen of, four months after ligation of hypogastric artery, 60; and prompt diagnosis, 300; Use of Percy cautery in, 300; Combined radiotherapy of, and breast, 301; treated by radium, 538; Inoperable, method of applying heat in, 529; Radiotherapy in, 632
- Uterine fibroid, 61; menorrhagia and radium, 61; Multiple, complicated by pregnancy, 191; röntgentherapy in, and uterine hæmorrhage, 539; X-ray treatment of menorrhagia and, 540
- Uterus, Retrodisplacement of, 64; Movable retrodisplacement of, 181; Chronic fixed retroversion of, 182; Acute traumatic displacement of, 301; Post-partum retrodisplacement of, 302; Prolapsus of, 424, 636; Post-partum inversion of, 431; Displacement of, 635; Backward displacement of, 636; Complete removal of adenocarcinoma of, by exploratory curettage, 60; Infantile, 62; Tuberculosis of and tubes, 62; Complete rupture of, during labor, 194; Rupture of pregnant, through scar of former cesarean section, 308; Congenital absence of vagina and, 540; Condition of, in ovarian hæmorrhage, 634; Removal of, instead of ovaries for incurable cases of menstrual disorders, 635; Transposition of bladder and, for cure of cystocele and descensus uteri, 637; duplex, 638; unicornis, 638; Periodic bleeding from mouth associated with hypoplasia of, 642; Causes, prevention and treatment of artificial perforation of, in abortion, 646; Causes which determine lie of fetus in, 653
- Uvula, Angioma of, 218
- Vagina, Congenital absence of, and uterus, 540; Repair of posterior wall of, 540
- Vaginal, Radium treatment of uterine and, cancer, 59; operations performed under parametric infiltration anesthesia, 186
- Vaginal hysterectomy, under spinal anesthesia, 64; Simplified technique for, 64; supplemented by radium therapy for cancer of uterus, 423; Indications for, 424
- Van Slyke aminonitrogen determination in diagnosis of cancer, 289
- Varices, Treatment of, of lower extremity by Kuzmik-Schede method, 407
- Varicocele, Pelvic, 640; Treatment of, with suspension of testicle, 661
- Varicose venous plexus of endometrium, 633
- Varicosities of pampiniform plexus, 326
- Vascular, Importance of, condition in orthopedic cases, 281; ligation in the tonsillar fossa, 561
- Vasectomy, Sterilization of unfit by, 84
- Vasoconstrictors in emergencies, especially in surgical shock, 403
- Vasomotor and trophic disturbances of upper extremities, 54
- Vena cava, Ligation of, in puerperal pyæmia, 199; Bilateral hypernephroma with secondary thrombosis of inferior, and terminal uræmia, 205
- Venous plexus, Varicose, of endometrium, 633
- Ventral decubitus in leg amputations, 279
- Ventricle, Tuberculosis of auditory apparatus treated by permanent drainage of lateral, 329; Tumor of third, 364
- Version, Placenta prævia and advantages of external, in its treatment, 188
- Vertebrae, Fracture of twelfth dorsal and first lumbar, laminectomy and results, 616; Operation for primary tumors of bodies of, 617
- Vesical, Experiences with high-frequency current in, tumors, 82; Prostatic obstructions and, atony, 86; diverticula, 658; Radium versus surgery in treatment of, neoplasms, 659
- Vesiculæ seminales, Calculus in, in man with enlarged prostate, 85
- Vestibules, Synechiæ and contraction of, 332
- Vicarious menstruation associated with hypoplasia of uterus and tubes and aplasia of ovaries and mammary glands, 642
- Villous tumors, Diagnosis and treatment of papillary or, of bladder, 550
- Visceral, ptosis, 35; stasis, mechanical obstructions and effects relievable by rational measures, 492
- Viscosity of blood and blood-pressure in pernicious vomiting and heart disease during pregnancy, 308
- Visual centers, Shrapnel wound of occipital region with involvement of, 663
- Vitreous chamber, Annular opacity of lens following penetrating wound into, 663
- Voice function, Tonsil surgery and, 561
- Volvulus, Intestinal obstruction due to sigmoid, 265; Gallstone causing intestinal obstruction and, 607
- Vomiting, Blood-pressure and viscosity of blood in pernicious, and heart disease during pregnancy, 308
- Vulva, Destruction of, and adjacent tissues probably due to pneumococcic infection, 185; Sweat-gland tumors of, 542
- WAR, Injuries of peripheral nerves during, 294; Treatment of peripheral nerve wounds in, 295; X-ray theater in, hospitals, 298; Operative treatment of injuries of peripheral nerves in, 416; injuries of peripheral nerves, 416; Bacterial flora of wounds produced during pres-

VACCINATION, Intra-uterine, 64

Vaccine, *Coccobacillus fetidis ozaenæ* perez, in treatment of ozaenæ, 94; Methods used to standardize bacterins (bacterial), 168

- ent, 418; Pathology of, surgery, 419; Treatment of wounds in, 420; Care and treatment of wounded in European, 422; Injuries of eye in, 521; Technique for late secondary amputations in, injuries, 528; Therapy of, wounds, 626; Hints on, surgery, 630
- Warmed sera, Meistagmin reaction with, 404
- Wassermann-Noguchi reactions, Syphilis of stomach; twenty-six instances of dyspepsia associated with positive, 603
- Weak feet, 48; Treatment of, 161, 400
- Wertheim operation, Use of Percy cautery as forerunner to, 300
- Wire splint in early treatment of congenital club-foot, 49
- Wounded, Twelve commandments for prevention of deformities in, 415; Care and treatment of, in European war, 422; Transportation of, 628
- Wounds, Preventing decubitus in, of spinal cord, 294; received in battle; observations during recent service in Austria, 296; Conservative or operative treatment of heart, 411; Bacterial flora of, produced during present war, 418; Early treatment of projectile, by excision of damaged tissues, 418; Necessity for systematic operation in abdominal, 524; Nerve-suture for bullet, 529; Immediate symptoms of penetrating, of thorax, 600; Technique in abdominal, closure, 603; Annular opacity of lens following penetrating, into vitreous chamber, 663
- Wounds, Gunshot, of head, 56; of intestines, 57; Treatment of abdominal, by means of compression bandage, 293; Operative findings in, of peripheral nerves, 296; Primary suture of, of brain, 410; Late hæmorrhage after, 411; of hip, 414; Primary suture of, 419; of skull, 520; of thorax, 522; of abdomen, 523; Perforating, of abdomen, 523; Treatment of, of knee-joint, 525; Shrapnel, of knee-joint, 625
- Wounds, Infected, 297; of blood-vessels, 171; Open treatment of, 288; Prevention and treatment of, 417; especially tetanus and gas phlegmon, 417; Use of formalin in very septic, and in gaseous gangrene, 418; Antiseptics in treatment of, 622; Treatment of, of knee-joint, 626
- Wounds, Treatment of, gangrenous, by free incision, 156; suppurating, with ultraviolet rays, 173; Various antiseptic substances for use in, 360; Orison and orison pencils in, 407; bullet and other wounds by ionization, 418; in war, 420, 627; Method of, sustained in action, 420; septic compound fractures and, 498; Open, 617; and immobilization in war, 627
- Wrist, Madelung's deformity of, 281
- Wyeth method, Treatment of angiomas by injection of boiling water, 515
- X-RAY, work at first western base hospital, 57, 529; treatment of exophthalmic goiter, 136; Apparatus for, localization, 173; diagnosis in gynecology with aid of intra-uterine collargol injections, 180; diagnosis of peptic ulcer, 260; Penetrating power of, from Coolidge tube, 292; Treatment of malignant disease by, 292; theater in war hospitals, 296; in carcinoma of breast, 479; treatment of menorrhagia and uterine fibroids, 540

INDEX OF BIBLIOGRAPHY

GENERAL SURGERY

Surgical Technique

- Operative Surgery and Technique, 98, 220, 335, 449, 565, 670.
 Aseptic and Antiseptic Surgery, 98, 220, 449, 565, 670
 Anæsthetics, 98, 220, 335, 449, 565, 670
 General. Local. General subjects on anæsthetics
 Surgical Instruments and Apparatus, 98, 220, 335, 449, 565, 670

Surgery of the Head and Neck

- Head, 98, 220, 335, 449, 565, 670
 Scalp. Skin. Nerves. Glands. Skull and Maxilla. Meninges. Brain, cerebrum, cerebellum, hypophysis
 Neck, 99, 221, 336, 450, 566, 671
 Skin. Glands. Muscles and blood-vessels. Bones. Thyroid: Goiter, Basedow's disease, Graves' disease. Parathyroid. Retropharyngeal conditions

Surgery of the Chest

- Chest Wall and Breast, 99, 221, 336, 450, 566, 671
 Breast. Incisions, wounds, injuries, etc. Bones. Pleura. Mediastinum. Thymus.
 Trachea and Lungs, 100, 221, 336, 450, 566, 672
 Trachea. Bronchi. Lungs
 Heart and Vascular System, 100, 221, 336, 450, 567, 672
 Heart. Pericardium. Aorta
 Pharynx and Esophagus, 100, 221, 336, 450, 567, 672

Surgery of the Abdomen

- Abdominal Wall and Peritoneum, 100, 221, 337, 451, 567, 672
 Incisions and drainage. Tumors. Retro- and pro-peritoneal conditions. Peritoneum. Diaphragm. Hernia. Omentum. Mesentery. Urachus. Diverticula
 Gastro-Intestinal Tract, 100, 222, 337, 451, 567, 673, 674
 Stomach and pylorus. Duodenum. Small intestines. Cæcum. Appendix. Colon. Rectum. Anus
 Secretions of, diagnosis, radiology, injuries, hæmorrhages, vomiting, inflammations, obstructions, hernia, ulcer, tumor, surgery, general therapy
 Liver, Pancreas, and Spleen, 102, 223, 338, 452, 569, 674
 Miscellaneous, 102, 223, 338, 453, 569, 674

Surgery of the Extremities

- Diseases of Bones, Joints, Muscles, Tendons. General Conditions Commonly Found in the Extremities, 102, 223, 338, 453, 569, 674
 Fractures and Dislocations, 103, 224, 339, 454, 569, 675
 Surgery of the Bones, Joints, etc., 104, 224, 339, 454, 570, 675
 Orthopedics in general, 104, 224, 339, 454, 570, 675

Surgery of the Spinal Column and Cord

- Diseases and Deformities of the Spine, 105, 225, 340, 455, 570, 675
 Inflammations, tumors, fractures, surgery. Cord

Surgery of the Nervous System

- Nervous System, 105, 225, 340, 455, 571, 676
 Inflammations, tumors, surgery

Surgery of the Skin, Fascia, Appendages

- Skin, Fascia, and Appendages, 106, 225, 340, 455, 571, 676
 Burns, injuries, inflammations, tumors, ulcers, surgery

Miscellaneous

- Clinical Entities — Tumors, Ulcers, Abscesses, etc., 106, 225, 340, 455, 571, 676
 Tumors. Ulcers. Inflammations. Shock. Tissue transplantation. Surgical diseases
 Sera, Vaccines, and Ferments, 106, 226, 341, 456, 572, 677
 Serum. Vaccine. Ferments. Immunization. Anaphylaxis
 Blood, 107, 226, 341, 456, 573, 677
 Blood picture in general. Hæmorrhage. Coagulation. Thrombosis. Embolism. Transfusion
 Blood and Lymph Vessels, 107, 226, 341, 456, 573, 677
 Aneurisms. Vessel suture and ligation. Lymph-vessels and glands
 Poisons, 107, 226, 341, 456, 573, 677
 Bacterial. Chemical
 Surgical Therapeutics, 107, 226, 341, 456, 573, 677
 Surgical Anatomy, 107
 Electrolology, 107, 227, 341, 457, 573, 677
 X-ray. Electrical treatment and injuries. Heliotherapy
 Military Surgery, 107, 227, 342, 457, 574, 678

GYNECOLOGY

- Uterus, 110, 228, 343, 460, 576, 679
 Tumors. Hæmorrhage. Inflammations. Malformations. Displacements. Injuries. Surgery
 Adnexal and Periuterine Conditions, 110, 228, 343, 460, 577, 680
 Ovaries. Tubes. Ligaments. Pelvic conditions in general
 External Genitalia, 110, 228, 344, 460, 577, 680
 Vagina. Vulva. Urethra. Clitoris
 Miscellaneous, 229, 344, 460, 577, 680

OBSTETRICS

- Pregnancy and Its Complications, 111, 229, 344, 460, 577, 680
 Pregnancy. Eclampsia and toxæmias. Cæsarean section. Abortion. Complications

Labor and Its Complications, 112, 229, 344, 461, 577, 681
 Contracted pelvis. Abnormal presentations.
 Dystocia. Hæmorrhage. Surgical treatment
 Puerperium and Its Complications, 112, 230, 345, 461, 577, 681
 Diseases common to. Infections. Hæmorrhages
 Miscellaneous, 230, 345, 461, 578, 681

GENITO-URINARY SURGERY

Adrenal, Kidney, and Ureter, 113, 230, 345, 461, 578, 682
 Adrenal gland. Kidneys. Ureters
 Trauma, calculi, displacement, malformation, hæmorrhage, tumors, inflammations, surgery, functional tests of
 Bladder, Urethra, Penis, 114, 231, 346, 462, 578, 682
 Trauma, calculi, displacement, malformation, hæmorrhage, tumors, inflammations, surgery

Genital Organs, 114, 231, 346, 462, 579, 683
 Testicle. Epididymis. Spermatic cord. Prostate
 Miscellaneous, 114, 231, 346, 462, 579, 683

SURGERY OF THE EYE AND EAR

Eye, 114, 231, 346, 463, 579, 683
 Glaucoma. Trachoma. Cataract. Inflammations
 Ear, 115, 231, 347, 463, 579, 683
 Outer ear. Middle ear. Internal ear. Mastoids. Brain abscess of otitic origin, etc.

SURGERY OF THE NOSE, THROAT, AND MOUTH

Nose, Throat, and Mouth (oral surgery) 115, 232, 347, 463, 580, 684
 Nose: external, internal
 Throat: tonsils, adenoids, larynx, pharynx
 Mouth: palate, cleft palate, teeth, tongue
 General conditions

INDEX OF AUTHORS

- Abbe, R., 61, 408, 518,
561
Ach, A., 78, 147
Adachi, S., 199
Adair, F. L., 309
Adam, L., 362
Adams, J. E., 204
Addis, T., 126
Agasse-Lafont, E., 407
Ahlfeld, F., 428
Aikin, J. M., 289
Akerblom, N. V., 632
Albee, F. H., 43, 160, 280,
499, 615
Albrecht, H., 71
Alexander, E. G., 392
Allen, C. W., 326
Allen, H. R., 160
Allison, N., 154
Amann, J. A., 192
Anderson, J., 203
Anderson, J. H., 27
Andrews, C. J., 312
Andries, R. C., 25
Anspach, B. N., 538
Arluck, S. S., 309
Armour, R. G., 47
Armstrong, G. E., 597
Arrowsmith, H., 219
Asch, J. J., 436
Aschheim, 181
Aschheim, S., 62, 305
Ashbury, H. E., 267
Ashby, T. A., 540
Ashcraft, L. T., 206, 209
Ashhurst, A. P. C., 334
Auerbach, S., 178
Auvray, 406
Axhausen, 415
Ayer, W. D., 363
Aynsworth, K. H., 549
Ayres, W., 325

Babcock, W. W., 16
Bach, J. A., 328
Back, I., 493
Bacon, C. S., 432
Baer, J. L., 311
Bahr, C., 522
Bainbridge, W. S., 18, 402
Baker, D., 248
Balch, F. G., 437
Baldwin, A., 14
Baldwin, J. F., 78
Balfour, D. C., 217, 484
Ballenger, E. G., 82
Ballner, J., 399
Bandler, S. W., 542, 651
Bannes, 564
Bárány, 410
Barbat, J. H., 81
Barber, C. H., 500
Barber, W. H., 209

Barbier, H., 77
Barclay, A. E., 25
Barnett, C. E., 435
Barringer, E. D., 301
Bartlett, W., 322, 377, 605
Barton, E. A., 654
Bartow, B., 159
Basdékis, S., 412
Bassett-Smith, P. W., 420
Bauch, B., 646
Bauer, A., 279
Baughman, G., 68
Baumann, E., 651
Baumler, C., 176
Bawtree, F., 418
Bazy, M., 402
Beach, R. M., 310
Beach, W. M., 267
Beaudoux, H. A., 442
Beaussanat, 411
Beck, C., 252
Beck, J. C., 92, 215, 329
Bednarski, A., 213
Beebe, H. M., 333
Beckman, F., 264
Beer, E., 551
Bell, J. F., 195
Bellot, 521
Bellot, A., 59
Benjamin, A. E., 477
Benthin, W., 645
Berard, L., 620
Berens, T. P., 444
Bergonié, J., 423
Bernheim, B. M., 55, 498
Berry, G., 443
Berry, H. M., 558
Bier, 406
Biesalski, K., 284
Bishop, H. D., 74
Bissell, D., 181
Bissell, J. B., 516
Bistis, J., 555
Black, J. E., 628
Black, K., 47, 489
Blackburn, A. E., 435
Blackfan, K. D., 129
Blair, V. P., 366
Blanchard, W., 45
Blecher, 481
Bliss, M. A., 95
Blodgett, S. H., 197
Bloodgood, J. C., 375, 505
Blumer, G., 485
Blumfeld, 245
Böcker, W., 179
Boerner, R., 440
Boggs, R. H., 517, 519
Bóhi, P., 545
Boit, H., 14, 19, 412
Boldt, H. J., 59, 127, 362,
424
Bollag, K., 196, 431

Bomhard, H. von, 144
Bonin, G. von, 514
Boothby, L. H., 498
Borchard, 522
Borelius, J., 369, 600
Bouvier, 413
Bovée, J. W., 191, 478
Bowen, W. S., 307
Boyle, C. C., 442
Brackett, E. J., 612
Brade, R., 128
Brannan, J. W., 310
Breitstein, L. I., 430
Brenizer, A. G., 361
Bressot, E., 600
Breton, P. le., 41, 158, 279
Brickner, W. M., 45, 156,
273, 497
Briggs, H., 71, 303
Briggs, W. T., 14
Brinkley, A. S., 314
Brodhead, G. L., 74
Bronfenbrenner, J., 165
Brooke, E. B., 67
Brown, L., 327
Brown, T. R., 605
Brown, W. M., 643
Bruce, H. A., 370
Brun, H., 23, 627
Bruns, P. von, 627
Brunzel, H. F., 482
Bryant, W. S., 496
Bubis, J. L., 597
Bubrows, A., 632
Buerger, L., 54, 83, 658
Bulkley, L. D., 504
Bull, P., 478
Bulson, A. E., Jr., 328
Bunts, F. E., 598
Burk, W., 272, 615
Burke, J., 492
Burnam, C. F., 304
Burnand, R., 480
Burnett, T. C., 52
Burnham, A. C., 396, 509
Burrows, A., 632
Butler, R., 669
Byers, J., 307

Cabot, H., 82, 655
Caldwell, J. R., 296
Caldwell, W. E., 427
Callender, G. R., 490
Calmann, 193
Campbell, W. C., 48
Campbell, W. F., 44
Campiche, P. S., 394
Carl, W., 138
Carlin, R. C., 64
Carman, R. D., 147, 484
Carroll, A. H., 263
Carroll, W. C., 145
Carslaw, R. B., 602

Carstens, J. H., 307, 635
Carta-Mulas, L., 322
Carter, W. W., 332, 446
Cary, E. H., 95
Cary, W. H., 66
Case, J. T., 516, 518
Casper, L., 437
Casselberry, W. E., 96
Cassirer, R., 416
Caudrelier, 413
Center, C. D., 326
Chadwick, H. D., 17
Chaney, R. H., 140
Chapple, H., 299
Chaput, 294
Chaput, M., 415
Chase, P. M., 546
Chase, W. B., 543
Chavannaz, G., 175
Cheatle, A., 128, 214
Cheron, H., 59
Cherry, T. H., 302
Cheyne, W. W., 420
Chiari, O., 164
Chotzen, T., 76
Ciconardi, G., 480
Clark, C. F., 88
Clark, J. S., 212
Clark, S. M. D., 300
Clark, W. L., 543
Claude, H., 161
Clay, J. V. F., 91
Claybrook, E. B., 498
Cleland, F. A., 301
Cléret, M., 77
Clopton, M. B., 491
Coates, G. M., 253
Cobb, F., 537
Cocks, G. H., 444
Codd, J. A., 292
Coffey, R. C., 268
Coffin, L. A., 447, 665
Cofield, R. B., 155
Cohn, I., 393
Cole, L. G., 150
Coley, W. B., 552
Colombino, C., 183
Connor, F. P., 629
Cook, W. W., 435
Cooke, A. B., 246
Cooke, J. V., 436
Cooley, E. L., 40
Cope, V. Z., 618
Copeland, E. P., 434
Corley, K. C., 304
Cornell, M. C., 318
Corner, E. M., 85, 400
Coryell, J. R., 204
Cotton, F. J., 496
Cotton, W., 173
Coués, W. P., 275
Coulter, C. F., 213
Coutead, 521

- Cramer, K., 283
 Cranmer, R. R., 64
 Crigler, L. W., 212
 Crile, G. W., 53, 472, 530
 Critchett, A., 88
 Crockett, F. S., 554
 Crohn, B. B., 494
 Crouse, H., 247, 384
 Cullen, T. S., 20, 30, 66, 67, 615
 Cumberbatch, E. P., 56
 Cummer, C. L., 599
 Cushing, H., 16, 476
- Dabney, V., 664, 665
 Dakin, H. D., 622
 Dalton, A. J., 49
 Dandy, V., 129
 Danforth, W. C., 70
 Darling, W. G., 650
 Darnall, W. E., 424
 Davidson, T. C., 528
 Davies, H. M., 137, 253
 Davis, B. F., 139
 Davis, C., 625
 Davis, E. D., 135, 136, 213
 Davis, E. P., 192, 281, 476
 Davis, G. G., 15, 281, 476
 Davis, J. S., 273, 495
 Davis, L., 26
 Deal, D. W., 246
 Deaver, J. B., 143, 487
 Decherd, H. B., 332
 Decker, 144
 Dégrais, 59
 Delavan, D. B., 557, 665
 Delbet, P., 420
 Delbert, P., 626
 Delitala, F., 153
 Delore, X., 625
 Demmer, F., 629
 Denk, W., 526
 Derby, R., 422
 Derge, H. F., 278
 Desgouttes, L., 600
 Deutschlander, C., 398
 Deutschmann, R., 441
 Dewey, M., 446
 Dickinson, G. K., 610
 Dietrich, H. A., 268
 Doege, K. W., 646
 Dorland, W. A. N., 77, 314
 Douglas, S. W., 194
 Dowd, A. F., 314
 Dowd, C. N., 19, 269
 Downey, J. H., 396
 Draper, J. W., 28, 383
 Dreyfus, G. L., 403
 Drucek, C. J., 185
 Druskin, S. J., 196
 Dudgeon, L. S., 418, 656
 Dumas, R., 161
 Dunn, J. S., 320
 Duval, P., 363
 Dwyer, J. G., 444
 Dyas, F. G., 55, 288, 615
- Eason, H. L., 90
 Eastman, J. R., 218
- Ebeler, F., 166
 Eddy, I. H., 309
 Edmunds, A., 420
 Eggstein, A. A., 166
 Ehrenfried, A., 399
 Eikenbary, C. F., 156
 Einhorn, M., 22, 33, 495
 Ekehorn, G., 636
 Elder, O. F., 82
 Eliot, E., Jr., 257
 Elliott, C. A., 152
 Elliott, G. R., 40
 Ellis, A. G., 642
 Elschmig, 521
 Elting, A. W., 151
 Ely, L. W., 41
 Enderlen, 57, 520, 524
 Engelmann, G., 177
 Erenfeld, H. M., 49
 Erlacher, P., 283, 613
 Estes, W. L., 159
 Ewing, J., 472
 Ewing, S. A., 444
- Fair, H. D., 72
 Fairbanks, R. E., 477
 Fairchild, W. E., 499
 Falls, F. H., 403
 Fauntleroy, A. M., 594
 Fee, F., 159, 290
 Feldner, J., 509
 Fetterolf, G., 557
 Fiedler, O., 499
 Fildes, P., 653
 Finochietto, R., 279
 Fischkin, E. A., 309
 Fisher, M. K., 136, 479
 Fiske, E. W., 154, 502
 Fitch, C. P., 168
 Fitzgibbon, G., 542
 Fitzsimmons, H. J., 17
 Flatau, S., 632
 Foges, A., 147
 Fossier, A. W., 563
 Fothergill, W. E., 304
 Fouche, F. P., 194
 Fowler, O. S., 79, 204
 Frank, L., 30, 320, 478
 Frank, R. T., 313
 Fränkel, M., 498
 Frankl, O., 633
 Franz, R., 193
 Fraser, J. S., 214
 Frazier, C. H., 362, 375
 Freeman, L., 51, 287
 Freer, O. T., 665
 Freiberg, A. R., 616
 Freund, H., 542
 Freundlich, D. B., 219
 Frey, H., 521
 Friedman, G. A., 25, 434
 Frigyesi, 60
 Frohse, F., 253
 Fromme, F., 199
 Fullerton, W. D., 426
 Funk, E. H., 192, 642
 Fursey, F. E., 189
- Gaither, E. H., 605
 Gallant, A. E., 84
- Gallie, W. E., 43, 46
 Gardner, A. D., 418
 Gardner, W. S., 300
 Gaub, O. C., 482
 Gaugele, K., 397
 Gautier, 313
 Gaylord, H. R., 164
 Geist, S. H., 480
 Gelinsky, E., 417
 Gellhorn, G., 69
 George, A. W., 140, 150
 George, W. S., 273
 Geppert, F., 367
 Geraghty, J. T., 323, 324, 660
 Gerber, I., 140
 Gerster, A. G., 483
 Gerster, J. C. A., 388, 611
 Gwin, W. C., 387
 Gibson, C. L., 264
 Gibson, G., 66
 Giffin, H. Z., 152
 Gifford, H., 212
 Gill, A. B., 398
 Gilmer, T. L., 363
 Ginn, C., 638
 Ginsburg, N., 39, 136
 Girdsdansky, J., 309
 Glenny, E. T., 628
 Glynn, E. E., 71
 Göbel, R., 414
 Goddu, L. A. O., 39
 Goebel, 533
 Goepp, R. M., 253
 Goetsch, E., 476
 Goldstein, 175
 Goldstein, M. A., 218, 447
 Goldstein, M. T., 640
 Goldthwait, J. E., 284
 Goodman, S. J., 70
 Gordon, G. S., 80
 Grabowski, A., 157
 Grad, H., 191
 Graef, C., 333
 Graef, W., 498
 Graff, 268
 Graff, E. von, 623
 Graham, C., 262
 Graham, C. I., 332
 Graham, E. A., 475
 Granger, F. B., 293
 Grant, E. O., 172
 Grant, H. H., 639
 Grant, J. S., 669
 Graves, F. S., 141
 Gray, A. A., 214
 Gray, B. H., 67
 Gray, E. T., 548
 Gray, H. M. W., 525, 627
 Grayson, C. P., 94
 Greene, R. H., 657
 Greer, J. R., 658
 Griffith, W. S. A., 653
 Grinnan, St. G. T., 77
 Groot, J. de., 428
 Gros, E. L., 628
 Gruss, J., 75
 Guedel, A. E., 312
 Guerry, 475, 523
 Guerry, L., 475
- Guggenheim, L. K., 94
 Gundelach, C. A., 94
 Gunn, L. G., 436
 Guthrie, C. C., 302
- Haberer, H. von, 137, 177, 376, 411
 Hackenbruch, 391
 Hagner, F. R., 205
 Haim, E., 138
 Haines, W. D., 608
 Halban, J., 425
 Hall, R. B., 607
 Hallett, 442
 Halpern, J., 487
 Hamann, C. A., 260
 Hamburger, W. W., 263
 Hamilton, J. A. G., 635
 Hamm, A., 173
 Hanck, 46
 Hanks, M. E., 496
 Hansing, W., 626
 Harbitz, F., 478
 Hargrave, E. T., 59
 Harmer, T. W., 167
 Harrigan, A. H., 428
 Harris, S. H., 438
 Harttung, H., 78
 Haseltine, B., 561
 Hastings, H., 663
 Hauke, 277
 Hazen, H. H., 162
 Healy, W. P., 301
 Hecker, F., 563
 Heile, 295
 Heineberg, A., 299
 Heineck, A. P., 40, 275, 639
 Helier, I. M., 666
 Hellman, A. M., 541
 Hernaman-Johnson, F., 174
 Herrick, F. C., 80
 Herrick, J. B., 618
 Herrmann, E., 65
 Hess, A. T., 510
 Hess, O., 80
 Hetrick, L. E., 546
 Hett, G. S., 560
 Hewitt, F., 245
 Heynemann, T., 202
 Heyrovsky, H., 171
 Hezel, 295
 Hezel, O., 294
 Hill, W., 669
 Hinman, F., 324, 440
 Hirschel, G., 57
 Hirschmann, C., 253
 Hofmeister, von, 58, 285
 Hofstätter, R., 62
 Hohmann, G., 285
 Hohmeier, F., 414
 Holland, C. T., 57, 529
 Holloway, T. B., 663
 Holmes, T., 636
 Holz, S., 425
 Holzapfel, K., 546
 Hoogenhuize, C. J. C. Van, 427
 Hoover, F. B., 78
 Hopkinson, D., 650
 Horsley, J. S., 171

- Horsley, V., 56
 Hosemann, 410
 Hotz, G., 514
 Howard, R., 251
 Howat, W. F., 645
 Howell, C. M. H., 178
 Howitt, H. O., 165
 Howland, G. W., 47
 Hubbard, J. C., 387
 Hubbard, T., 668
 Huffmann, M., 201
 Hugel, K., 383
 Huggins, R. B., 641
 Hunner, G. L., 325
 Hunnicutt, J. A., 495
 Huntington, W. H., 213
 Hüsey, P., 303, 313
 Hutchins, H. T., 537
 Hybbinette, S., 562
 Hyman, A., 82, 438
 Hynanson, A., 546

 Imbert, L., 393
 Imboden, H. M., 145
 Ingalls, E. F., 481
 Ingraham, C. B., 546
 Irons, E. E., 289
 Irving, F. C., 432
 Irwin, H. C., 386
 Israel, W., 419
 Ivy, R. H., 217

 Jablons, B., 419
 Jackson, C., 369, 482
 Jackson, J. N., 479
 Jackson, W. R., 42
 Jacoby, A., 180
 Jacomet, 530
 Jaffé, H., 290
 James, J. E., 189
 Jansen, M., 400
 Jardine, R., 73, 198
 Jaschke, R. T., 79
 Jaworski, J., 201
 Jayle, F., 187
 Jeanbrau, F., 324
 Jefferson, G., 260
 Jehn, W., 366
 Jellett, H., 72
 Jervay, J. W., 561
 Jessen, F., 368
 Jessup, D. S., 490
 Jobling, J. W., 166
 Jobson, G. B., 215
 Johnston, R. H., 446
 Joll, C. A., 629
 Jonas, 71
 Jones, D. H., 165
 Jones, G. I., 146
 Jones, S. F., 47
 Jones, W. C., 431
 Jong, L., 639
 Jopson, J. H., 596
 Jost, O., 45
 Jost, W. E., 436
 Judd, E. S., 86, 553

 Kanavel, A. B., 152
 Kausch, 619
 Kehrer, E., 642

 Keilty, R. A., 28, 360
 Keith, A., 380
 Keith, D. Y., 276
 Keith, N. M., 322, 651
 Keitler, H., 187
 Keller, H., 613
 Kelling, G., 293, 481
 Kellogg, F. B., 212
 Kelly, H. A., 61
 Kelson, W. H., 556
 Kempf, F., 509
 Kennedy, B., 423
 Key, E., 617, 655
 Keyes, E. L., Jr., 660
 Killian, G., 217
 Kimpton, A. R., 387
 Kinnear, F. J., 547
 Kirkwood, W. L., 490
 Kirstein, F., 303
 Kisch, E., 496
 Kivlin, C. F., 644
 Kjaergaard, S., 200
 Klein, G., 301, 507
 Klipstein, G. T., 73
 Knott, V. B., 425
 Knox, R., 408
 Knox, R. W., 393
 Köhler, H., 500
 Kohler, R., 635
 Kohlmann, W., 302, 323
 Kolischer, G., 175, 517
 Koll, I. S., 553
 Kolmer, J. A., 431, 651
 Kondoléon, E., 407
 Kopetzky, S. J., 127
 Körte, 523
 Kowarachik, I., 187
 Krecke, A., 292
 Kretschmer, H. L., 210, 658
 Krotoszyner, M., 655
 Krumbhaar, E. H., 610
 Kubinyi, von, 62
 Kümmell, 417
 Kunreuther, 191
 Küpferie, 476
 Küstner, O., 544
 Kyle, J. J., 664

 Laborde, S., 617
 Lackner, J. E., 308
 Ladinski, L. J., 60
 LaGarde, L. A., 534
 Lake, N. C., 527
 Lake, R., 556
 Lambert, L., 489
 Lamy, L., 400
 Landau, L., 191
 Landsberg, E., 187
 Lane, N. F., 61
 Lane, W. A., 158, 380
 Lange, S., 540
 Lapenta, V. A., 488
 Lapointe, A., 623
 Large, S. H., 444
 Lauth, G., 634
 Lawen, A., 624
 Lawrance, J. S., 70
 Leach, J. J., 263
 Lee, M. E., 302
 LeFort, R., 600, 623, 625

 Lent, M. F., 598
 Leriche, R., 524
 Leschke, E., 369
 Leshure, J., 447
 Leszynsky, W. M., 50
 Levison, L. A., 170
 Levy, R., 144
 Lewis, A. C., 89
 Lewis, B., 86, 209
 Lewis, F. O., 332
 Lewis, J. D., 95
 Lewisohn, R., 511
 Lewy, A., 445
 Leker, E., 245
 Lexer, E., 395
 Libby, W. E., 311
 Libman, E., 511
 Lichtenberg, A. Von, 207
 Lichty, J. A., 610
 Lieblein, V., 605
 Liguave, P., 602
 Liek, E., 205
 Lier, E. H., Van, 265
 Liesegang, R. E., 198
 Lillenthal, H., 45, 138, 251
 Lillie, H. I., 93
 Linder, W., 34
 Link, G., 399
 Lister, W. T., 89
 Lobingier, A. S., 29
 Lockard, L. B., 180
 Loeb, L., 52
 Loew, P., 621
 Löffelmann, 274
 Lohmeyer, G., 200
 Löhnberg, E., 166, 302
 Long, J. H., 601
 Long, J. W., 394
 Longaker, D., 428
 Longard, C., 411
 Lothrop, H. A., 558
 Lotsch, F., 612
 Lovett, R. W., 161
 Lowenhjeim, C., 600
 Lower, W. E., 553
 Lowsley, O. S., 85
 Lowy, O., 289
 Luckett, W. H., 377
 Lombard, J. E., 247
 Lundsgaard, K. K., 442
 Lunkenbein, 404
 Lydston, G. F., 219
 Lynch, F. W., 430
 Lynch, J. M., 28, 383
 Lynch, T. J., 67

 Maas, H., 283
 MacCarty, W. C., 143, 386
 MacFarlane, W. D., 643
 Macklem, G. E., 321
 Maclean, H. S., 190
 Macleish, A. C., 555
 Macnaughton-Jones, H., 540
 Macy, M. S., 392
 Madill, D. G., 637
 Makuen, G. H., 667
 Manges, W. F., 409
 Mann, A. L., 310
 Mann, G., 393

 Marburg, O., 178, 529
 Marcy, W. H., 157
 Marek, R., 201
 Marie, P., 294
 Marquis, E., 177
 Marshall, H. W., 281, 366
 Martin, F., 263
 Marzynski, G., 547
 Mason, G. M., 400
 Mason, J. M., 405
 Massey, G. B., 538, 661
 Mathews, W. P., 49
 Matthews, A. A., 392
 Matti, H., 282
 Maucclair, P., 284
 Maunsell, C. B., 448
 Maurer, A., 299
 Mayer, A., 173
 Mayer, E., 668
 Mayerhofer, E., 374
 Maylard, A. E., 146
 Mayo, C. H., 24, 63, 150, 365
 Mayo, W. J., 151, 208, 288, 378
 Mayo-Robson, A. W., 630
 McCarthy, D. J., 646
 McCaw, J. A., 328, 441
 McCoy, J. N., 517
 McCullagh, S., 559
 McDonald, E., 473
 McEwan, J. S., 638
 McGavin, L., 275
 McGlennan, A., 265, 606
 McGlinn, J. A., 632
 McGuire, F. W., 157
 McGuire, H. H., 89
 McKenzie, D., 555, 556, 596
 McKinney, R., 481
 McLean, A., 170
 McMullen, C. C., 473
 McNee, J. W., 628
 McQueen, R., 498
 Medak, E., 388
 Mehliß, 389
 Meidner, S., 305
 Meisenbach, R., 48
 Meltzer, S. J., 403
 Mercadé, S., 372
 Metcalf, C. R., 159
 Metzenbaum, M., 94
 Meyer, A. W., 616, 620
 Meyer, F. M., 174
 Meyer, R., 65
 Meyer, W., 370
 Miller, C. J., 315
 Miller, F. E., 663
 Miller, J. R., 643, 651
 Miller, S. R., 477
 Milligan, E. T. C., 418
 Milligan, W., 95, 217, 334
 Mills, L., 206
 Mollison, W. M., 555
 Montgomery, E. E., 636
 Montgomery, F., 474
 Moodie, R. L., 318
 Moore, H. A., 550
 Moore, I., 669
 Moore, J. E., 392

- Moore, R. F., 89
Moorhead, J. J., 158
Moorhead, S. W., 439
Moran, J. F., 76
Moravek, A. J., 613
Morestin, H., 360, 402, 418
Morgan, H. J., 202
Morgan, W. G., 141
Morian, R., 547, 614
Morris, R. T., 268
Mortimer, J. D., 403
Morton, H. H., 552
Moschcowitz, A. V., 372, 373
Moschcowitz, E., 497
Mosher, G. C., 127
Mosher, H. P., 665
Moskowitz, S., 664
Motley, J. C., 183
Mowat, H., 629
Müller, G., 283
Müller, J., 447
Müller, P., 363
Murphy, D. J., 614
Mutch, N., 380

Nair, B. P., 542
Napier, F. H., 91
Neisser, A., 303
Neuhof, H., 162, 276
New, G. B., 97
Newcomet, W. S., 538
Newell, F. S., 76
Newman, H. P., 187
Newton-Davis, C., 625
Nicoll, M. Jr., 508
Noehte, 416
Noguiera, A., 547, 550
Nonne, M., 416
Nystrom, G., 500

Ober, F. R., 615
O'Connor, J., 43
Oden, R. J. E., 189, 201
Oechsner, J. F., 611
O'Farrell, T. T., 434
Ohkohchi, T., 290
Ohly, A., 387
Olitsky, P. J., 173
Oliver, J., 190
O'Reilly, J. A., 155
Orlovius, M., 544
Ottenberg, R., 511
Outerbridge, G. W., 542
Outland, J. H., 64, 424
Owen, W. B., 48, 161

Packard, G. B., 154
Packard, H., 438
Packer, J. E., 360
Page, C. M., 278
Page, H. M., 326
Painter, C. F., 612
Palen, G. J., 445
Pantzer, H. O., 601
Paris, J., 382
Parke, W. E., 644
Parkes, C. H., 27
Parkes, W. R., 281
Parsonnet, V., 639

Parsons, A. L., 41
Paton, L., 172
Patry, G., 491, 502
Patterson, N., 555
Patton, J. A., 80
Paus, N., 611
Peck, C. H., 260
Pedersen, V. C., 439, 551
Pegler, L. H., 332
Pel, P. K., 375
Pellissier, P., 308
Pennington, J. R., 149
Pennock, W. J., 208
Percy, J. F., 539
Perthes, G., 526, 528
Peterhanwahr, L., 20
Peterkin, G. S., 662
Petersen, W., 166
Peterson, E. W., 26
Peterson, R., 31, 429
Petren, G., 379
Petri, T., 317
Pettit, J. A., 603
Pfaff, J. A., 190
Pfahler, G. E., 539
Pfeiffer, D. B., 267
Pfeiler, W., 199
Pfender, C. A., 272
Pfister, F., 446
Philippowicz, J., 385, 388
Phillips, J., 162
Philippsthal, 395
Pierce, C. H., 213
Piéry, 410
Pinch, A. E. H., 55
Pinkham, E. W., 640
Pirrung, J. E., 159
Plass, E. D., 190
Platt, H., 318
Plummer, H. S., 365
Polak, J. O., 74, 311, 427
Pollitzer, S., 503
Pollock, L. J., 364
Porter, J. L., 275
Porter, M. F., 136, 182, 484
Posey, W. C., 88, 216
Pozzi, S., 423
Powell, C., 185, 540
Prentiss, C. W., 391
Pribram, B. O., 388, 620
Pribram, E., 290
Primšar, F., 189
Prochownick, L., 199, 633
Proust, R., 382
Pryor, J. H., 391
Pupovac, D., 53, 170

Quain, E. P., 44
Quénu, 406
Quigley, J. K., 195

Rabinovitz, M., 307
Ramsay, M. L., 631
Ransohoff, J., 364
Ransohoff, J. L., 59
Ranzi, E., 178, 419, 529
Rapin, O. J., 640
Ratnoff, N., 196
Raynor, F. C., 334
Reber, W., 443

Recasens, S., 184
Reder, F., 647
Reder, F. R., 515
Rehfuss, M. E., 483
Reichold, 293
Reynier, P., 521
Ricen, L., 548
Richards, G. I., 601
Richardson, C. W., 667
Richardson, E. P., 548
Ridlon, J., 159
Riedel, 287
Riedl, H., 277
Ries, E., 541, 549
Ringel, 248
Risley, E. H., 52
Rissmann, P., 315
Ritchie, F. G., 441
Ritschl, 415
Robertson, G., 160
Robertson, T. B., 52, 433
Robinson, W. J., 186
Roblee, W. W., 34
Rodman, W. L., 18
Rogers, M. H., 155
Roman, D., 560
Rongy, A. J., 649
Röpke, 199
Rosenbloom, J., 554
Ross, A., 210
Ross, G. G., 143
Rossié, J., 407
Rost, F., 608
Roth, J. B., 557
Roth, L. J., 552
Rothe, von, 532
Rouhier, G., 423
Roussy, G., 294
Routhier, A., 528
Rowntree, L. G., 651
Roy, D., 562
Rubens-Duval, 59
Rubin, I. C., 180
Ruge, E., 186
Rummelsburg, S., 395
Russ, S., 292
Russ, W. B., 607
Russell, R. H., 83

Salmond, R. W. A., 408
Salzmann, F., 174
Santos, C., 440
Sauerbruch, 522, 524
Savage, M. M., 216
Savariaud, M., 500
Savini, C., 661
Sawrey, E. R., 213
Schaefer, C. D., 397
Schäfer, A., 411
Schälek, A., 504
Schanz, A., 279
Schapira, W. S., 435
Schapira, S. W., 660
Schede, 617
Schede, F., 283, 617
Scheplermann, E., 482, 508, 595
Schlesinger, A., 401
Schloessing, K. E., 312
Schmeiderhöhn, O., 383

Schmid, H. H., 417
Schmieden, 523
Schoolman, N., 560
Schoppe, W., 503
Schüle, 287
Schuler, W., 197
Schultz, O. T., 504
Schultze, 287
Schultze, F., 279
Schum, H., 621
Schwartz, 413
Schwarz, G., 174
Schweitzer, B., 646
Schwyzer, A., 314
Scudder, C. L., 24
Sear, H. R., 488
Secher, K., 407
Secord, E. R., 165
Seedorf, M., 643
Seefisch, G., 178
Selye, H., 521
Seubert, 397
Sever, J. W., 154
Shanbaugh, G. E., 665
Shaw, W. F., 308
Shepard, G. A., 445
Sherrill, J. G., 141, 658
Shuter, R. E., 443
Sibley, W. K., 418
Simmons, C. C., 38
Simon, R. M., 91
Sippel, A., 126
Sippy, B. W., 374
Skeel, A. J., 430
Skeel, R. E., 35
Skillern, P. G., Jr., 44
Skillern, R. H., 330
Slemons, J. M., 194
Sluder, G., 665
Slye, M., 505
Smead, L. F., 637
Smith, A. J., 28
Smith, C. M., 445
Smith, E. H., 397
Smith, F. D., 201, 390
Smith, F. H., 183
Smith, H., 330
Smith, J. F., 278
Smith, O. C., 16
Smith, P., 88
Smith-Bassett, B. W., 420
Smithies, F., 21, 141, 485, 486, 603, 604
Snodgrass, W. A., 643
Soderlund, G., 248
Solomons, B., 182
Soper, H. W., 28
Soresi, A. L., 143, 389
Specklin, P. A., 549
Spéder, E., 423
Speese, J., 596
Spicer, W. T., 91
Spittel, R. L., 661
Spitzer, W. H., 550
Squier, J. B., 551, 659
Standfuss, B., 199
Stanton, E. M., 33, 145, 473
Starck, H., 478
Stein, O. J., 330

- Steinthal, 285
 Stetten, D., 172
 Stewart, F. T., 291, 598
 Stewart, G. N., 510
 Stoeckel, W., 184
 Stöffel, A., 401
 Stoffel, A. A., 280
 Stoney, F. A., 631
 Stoney, R. T., 529
 Stratton, R. T., 38
 Stratz, C. H., 68
 Strauss, L., 606
 Stresemann, 200
 Stroud, J. B., 433
 Stucky, J. A., 91
 Sturgis, M. G., 45
 Suchanek, E., 176
 Svindt, I., 285, 385
 Swearingen, M., 306
 Sweringen, B. Van, 608
 Sweet, J. E., 140
 Syme, W. S., 559
 Symonds, C., 39, 153
 Szily, A. von, 476
- Tarnowsky, G. de., 325
 Tarr, E. M., 649
 Tate, 245
 Tate, M., A., 62
 Taylor F., 206
 Taylor, H. C., 306
 Taylor, J. M., 492
 Taylor, R. T., 401
 Terney, B., 662
 Témoïn, 409
 Tennant, C. E., 360
 Thaler, H., 650
 Thaysen, T. E. H.,
 Thomas, B. A., 659
 Thomas, J. B., 538
 Thomasson, W. J., 331
 Thompson, G. S., 562
 Thompson, L. M., 202
 Thompson, W. R., 328
 Thoms, H. K., 545
 Thomson, St. C., 217
 Thomson-Walker J. W., 327
- Thring, E. T., 494
 Tilmann, 520
 Tissier, 313
 Tivnen, R. J., 441
 Todd, A. H., 273
 Todd, F. C., 663
 Tölken, R., 493
 Torek, F., 254
 Tornai, J., 624
 Toussaint, H., 156
 Townsend, I., 558
 Trawick, J. D., 276
 Trémolières, 621
 Trotter, W., 249
 Trout, H. H., 282, 394, 398
 Tubby, A. H., 501
 Tudor, T. J., 619
 Tuffier, 524
 Tuffier, T., 625, 630
 Turner, A. L., 329
 Turner, G. G., 373
 Turner, J. G., 563
 Turner, N., 556
 Tweedy, E. H., 307
 Tyler, G. T., 633
- Unger, W., 403
 Unterberger, F., 647
 Upcott, H., 269
- Vake, R. T., 73
 Valentine, J. J., 326
 Vanderveer, A. and E. A.,
 396
 Van Waasbergen, G. H.,
 620
 Verhoeff, F. H., 90
 Verriotis, T., 658
 Viana, 64
 Vigoroux, A., 161
 Voelcker, F., 296
 Vogt, E., 75, 429
 Volkmann, J., 49, 600
 Voorhees, I. W., 369
- Wade, H. A., 640
 Wagner, G. A., 634
- Wahrer, C. W., 197
 Walker, J. W. T., 87
 Wallace, C., 656
 Wallace, C. J., 71
 Wallace, W. L., 39
 Wallart, J., 182, 303
 Walls, W. K., 308
 Walther, 306
 Walton, A. J., 604
 Warbasse, J. P., 153
 Ward, G. G., Jr., 426
 Warfield, L. M., 169
 Warnekros, K., 545
 Warner, J. W., 423
 Warren, E. L., 96
 Warren, G. W., 660
 Watson, B. P., 193
 Watson, C., 382
 Watson, J. H., 434, 614
 Watson-Williams, P., 96,
 331
 Weber, F. P., 205
 Webster, J. C., 195
 Weible, R. E., 51
 Weil, R., 163
 Weinert, A., 268
 Welton, C. B., 93
 Wepfer, A., 530
 Werner, R., 175
 West, C. E., 329
 Whipple, G. H., 606
 Whitche, B. R., 300
 Whitehead, R. H., 171
 Whittemore, W., 19
 Wichmann, S. E., 654
 Widdowson, F. R., 594
 Widén, J., 69
 Wiener, J., 29
 Wiener, S., 638
 Wight, J. S., 44
 Wilcox, S. F., 184, 303
 Wilensky, A. O., 253, 367,
 480
 Williams, A. W., 245
 Williams, C. E., 444
 Williams, J. T., 35, 180
 Williams, J. W., 544
- Williams, P. F., 431, 636,
 651
 Willien, W. T., 616
 Willimczik, M., 407
 Willis, A. M., 271
 Willson, H. L., 140
 Wilmer, W. H., 328
 Wilson, H. A., 160
 Wilson, J. G., 665
 Wilson, L. B., 270
 Wilson, W., 560
 Wingrave, W., 214
 Winn, J. F., 68, 188
 Winthrop, G. J., 266
 Wissing, O., 404
 Wittkopf, H., 426
 Wohl, M. G., 167
 Wolf, H. F., 276
 Wolfe, C. T., 556
 Wolfer, J. A., 84
 Wolff, A., 528
 Wolff, P., 193
 Wood, C. A., 663
 Wood, F. C., 507
 Woolsey, G., 485
 Woolsey, W. C., 139
 Wright, A. E., 297
 Wyder, T., 188
 Wyeth, J. A., 277
 Wylie, C. B., 88
- Yeomans, F. C., 386
 Young, E. L., Jr., 208
 Young, J. K., 158, 161, 500,
 502
- Zacharias, E., 202
 Zade, M., 193
 Zalewski, E., 188
 Zangemeister, W., 303
 Zinn, W., 367
 Zobel, A. J., 384
 Zuckermann, H., 650
 Zurhorst, E. W., 610
 Zwaluwenberg, J. J., 260
 Zweifel, 197
 Zweifel, E., 186, 197

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COLLECTIVE REVIEW

TUBERCULOSIS OF THE BONES AND JOINTS

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THE articular and osseous types of tuberculosis are probably the commonest causes of severe and crippling deformity. They are constantly reinforcing the growing army of the handicapped and incompetent, and there are many deaths on the firing line. Their favorite time of attack is during the years of active growth, and the preferred sites are the spine and the ends of the long bones near important joints, which usually become infected and distorted, and are often destroyed.

This phase of the war against tuberculosis has enlisted the best thought and effort of sanitarians, social workers, philanthropists, pathologists, and clinicians for many years, and the success already achieved should encourage redoubled efforts. It is the aim of this review to emphasize the peculiar problems, the strategic points, and the successes in this campaign.

The literature is of formidable compass and is expanding rapidly. It fills many pages of Hoffa and Blencke's *Orthopedic Literature*, 1905, and occupies 55 pages in Krause's work, 1899; it is now so large as to be embarrassing. Senn of Chicago gives a résumé of the known facts with copious references up to 1892 in his work on tuberculosis of the bones and joints. An excellent exposition of the pathology was given by Nichols, of Boston, 1898, from original studies, and more recently by Ely and Fraser.

PATHOLOGICAL ANATOMY

Bone is essentially connective tissue impregnated with lime salts. Its blood supply, care-

fully studied by Lexer, is derived from nutrient vessels, from the vascular anastomosis around the joint, and from the periosteum. Bones are covered by periosteum, the inner cellular layer of which is osteogenetic. Bone-marrow may be red or yellow, according to the number of blood-forming cells present. Joints are formed of the component bones capped by cartilage, connected by fibrous capsules and ligaments, and lined with synovial membrane. The tubercle bacilli are carried to the bone-marrow, through the blood-vessels, and lodge in the small loops, where they become centers of active cell proliferation. Thus the tubercle is formed, which, as it contains no blood-vessels, soon undergoes necrosis at its center. Separate tuberculous centers form and become masses which may terminate in larger areas of necrosis. Granulation tissue is formed around the tuberculous area and may later become a firm capsule. Later in the process cold abscesses or sequestra may appear. Tuberculous disease may occur at any point, but is commonest in or near an epiphysis. In the phalanges, however, the deposit is in the marrow of the shaft, and new bone is formed under the periosteum. Whether the invasion of a joint is usually primarily osseous or synovial has been a much disputed point. Nichols, from the examination of 120 excised, amputated, or autopsied tuberculous joints, states that he has never seen a joint in which if all the bones entering the joint were sawed open in thin layers one or more old bone foci were not found.

Most authorities believe that while the in-

vasion is more often osseous, synovial invasion does occur and more frequently in adults. Ely's views have attracted much attention, and they seem to be a distinct advance in explaining the pathology and clinical picture. His opinion, based on the examination of specimens, is that the only primarily vulnerable tissues are red bone-marrow and the synovial membrane. Bone and cartilage are attacked secondarily by having their nutrition undermined. Nature's cure is an attempt at walling off the focus and ankylosing the joint. When motion is abolished, red marrow degenerates into yellow, and the tuberculous process finally comes to an end by starvation. Bone tuberculosis becomes joint tuberculosis when a focus breaks into a joint; it may, however, discharge itself outside or become encysted or absorbed. Joint effusion is secondary to synovial involvement. The histological details are discussed at length by Fraser, who also gives the necessary bibliography. It should be remembered that both bone and joint tuberculosis have a strong tendency to self limitation and natural cure, and that destructive and reparative processes go on side by side.

PATHOLOGY

The conception of a close relationship between pulmonary consumption and certain common joint and spinal diseases had made considerable headway before Koch made his momentous announcement of the discovery of a specific organism in 1882. Delpech called attention in 1816 to the practical identity of pulmonary consumption and certain joint diseases. Rokitansky, in 1844, found tubercles in the synovial membrane of cases of white swelling. This was confirmed and elaborated by Virchow, Volkmann, and others. Hüter, in 1872, and Schüller, in 1880, produced characteristic infections in injured joints of animals after injecting tuberculous material into the blood. Billroth, König, Krause, Lannelongue, Cheyne, and many others added greatly to our knowledge of the pathology of these diseases.

It has been abundantly proved that the commonest form of chronic joint disease in children, often called strumous or scrofulous a generation ago, is always caused by the invasion of tubercle bacilli, the growth of granulomata, called tubercles, about the colonies, and the subsequent degenerative and regenerative changes. The process is essentially identical with that which takes place in the lungs, glands, and other organs when similarly invaded; the term tuberculosis is now almost invariably used. Tubercle bacilli

usually may be found in the tissue of the infected parts, though sometimes with difficulty or in small numbers. Nichols says that the small numbers found in bone may be due to the prolonged decalcification with acid. He states that in the pus from tuberculous abscesses the bacilli are usually absent, or at least not found.

The human organism is liable to invasion by two types of tubercle bacilli, the human and the bovine; these cannot certainly be distinguished by their morphological characters, but must go through a complicated series of inoculation, culture, and other tests which takes several months.

From Koch, who in 1897 announced his belief that human infection from bovine tuberculosis was practically negligible, to the present time there has been much careful investigation of this problem with a growing belief that bovine infection is an important source of disease, especially in surgical tuberculosis and in children. The bovine bacillus is more anaërobic than the human, which may account in part for its greater prevalence in the bones, joints, and glands, and the lesser liability of the lungs to infection by it. The investigations show a great diversity in results from the 2.5 per cent bovine found by fifteen authors in 163 cases of bone and joint tuberculosis collected by Möllers to the 60 per cent found by Fraser in 70 cases in Edinburgh. These discrepancies, as pointed out by Fraser, may be closely related to an infected milk supply and to an early age of incidence.

This leads easily to the much discussed question of the route of infection, whether by inspiration or ingestion. As in children surgical tuberculosis predominates, in adults, pulmonary, it is reasonable to suppose that in the former the intestinal canal, in the latter the air passages, are the favorite routes, though the blood current and lungs may be infected through the abdominal glands.

Mitchell of Edinburgh believes that the tonsils are an important portal of entry; others have called attention to infection through decayed teeth.

The evidence seems to be gaining ground that surgical tuberculosis in children is largely bovine and dependent upon an infected milk supply.

The relative importance of an infecting agent and a favorable soil is also being much investigated. Inheritance seems to be a less important factor than it was formerly believed to be.

Exposure to tuberculous individuals in the family is very common in bone tuberculosis. Fishberg found in a group of 692 children living

with consumptive parents, 65 had active tuberculosis, 19 of which had tuberculosis of the bones. At 14 years nearly 84 per cent of this group reacted to the von Pirquet test. Wallace found in a group of 443 cases of bone and joint tuberculosis that 60 had been exposed to a pulmonary case in the family circle.

INCIDENCE

It has been shown that delicate and undernourished children are more liable to tuberculosis; so bad housing, poverty, overwork, unhygienic conditions, lack of sunlight and fresh air, insufficient food, alcoholism in the parents, and a consequent general lack of vigor are important predisposing causes. Findlay shows that intestinal catarrh renders animals more liable to infection after ingestion of tuberculous material, and Lane, Ward, and others attribute an important rôle to intestinal stasis in producing or aggravating joint tuberculosis.

The relation of trauma to joint tuberculosis was exhaustively discussed in 1906 by Deutschländer, with many references. Most observers agree that the history of trauma in bone tuberculosis is frequent, also that the trauma most apt to be followed by tuberculous infection is a moderate contusion rather than a trivial or a serious injury. Fractures, dislocations, and sprains are rarely followed by tuberculosis, the subsequent congestion and repair being unfavorable to its development.

Bauer, Sayre, and C. F. Taylor, American pioneers in orthopedic surgery, all taught the traumatic origin of the joint disease now recognized as tuberculous. Wilson and Rosenberger and other recent writers see in trauma little more than a "coincidental condition," while Da Costa and others believe that trauma is often a determining cause. The question is intermixed with the frequency of tuberculization and the definitions of what constitutes an infected individual.

Different investigators have found evidences of tuberculosis in from 30 to over 90 per cent of unselected autopsies. Most children of the working class are sensitized to tuberculosis when they reach 15 years, though comparatively few show then or later any evidence of clinical tuberculosis. Some authors (Baldwin, Rau, Fishberg) believe that this early infection is a relative protection against adult disease, and cite the undoubted fact that children with tuberculous joints rarely develop phthisis. This is particularly striking in dorsal Pott's disease, where the child not only carries the tuberculous in-

fection, but its breathing power is diminished by thoracic deformity.

Further than this, tubercle bacilli have not only been often found in the circulating blood in active and healed bone tuberculosis (Krabbel, Mau) but in the tissues of apparently healthy individuals. If most adults are already tuberculized, even if not diseased in the clinical sense, the preëxisting bacillary infection which makes a joint vulnerable to tuberculosis after a trauma is usually present; moreover, there appears to be no reason to suppose that many of these individuals in ordinary health would ever develop this local joint infection without the trauma; so one is landed not so very far from the pioneers on the question of the importance of trauma as a determining cause.

The importance of ordinary dust as a means of transmission, except in the form of dried sputum, is still uncertain.

The Hebrew race is relatively immune to tuberculosis; in some of the most congested districts of the East Side of New York the mortality from tuberculosis is far less than in certain districts inhabited by other races under much more hygienic conditions. In certain places the Italians are markedly immune (Montclair, N. J., Board of Health reports); the negro, on the other hand, has an increased susceptibility.

The fear of infection in pulmonary cases has been excessive; Baldwin says that adults are very little endangered by close contact with open tuberculosis, and not at all in ordinary association. It is probable, from experience with nurses, physicians, and other patients in hospitals and dispensaries, that bone and joint tuberculosis, even when sinuses exist, is non-communicable.

The following statistics are quoted from Whitman. In 13,308 cases of tuberculosis of the bones and joints the —

Vertebrae were affected in.....	42 per cent ¹
Hip-joints.....	30 per cent
Other joints.....	27 per cent

In 3561 cases treated at the Hospital for Ruptured and Crippled and at the Vanderbilt Clinic, New York —

40 per cent were of the trunk.
57 per cent were of the lower extremity.
3 per cent of the upper extremity.

At the Boston Children's Hospital the distribution in 3820 cases were as follows:

Trunk.....	51 per cent
Lower extremity.....	47 per cent
Upper extremity.....	1 per cent

¹ In giving percentages fractions are omitted.

Terry and Allison report 39 per cent spinal, 31 per cent hip, and 29 per cent all other joints, in over 22,000 cases.

From the records of the Hôpital Maritime at Berck, Calvé reports the percentage of multiple cases as around 10 per cent.

In most statistics there is a considerable preponderance of tuberculosis of the right side at all the joints, and the disease is somewhat more common in males than females. In 5461 cases treated at the Hospital for Ruptured and Crippled, New York, about seven-eighths were under 14 years of age.

Tuberculosis of bone is more frequent than is usually supposed; Fraser found 353 cases exclusive of spinal and joint cases:

28 per cent were of the skull, jaw, and mastoid.
17 per cent were of the upper extremity.
50 per cent were of the lower extremity.
4 per cent were of the ribs.

Pirie found tuberculous osteomyelitis 50 times in 8800 X-ray cases.

CLINICAL FEATURES

As a rule tuberculous bone and joint disease is extremely insidious and it is usually monoarticular. At first the symptoms are mild and pain is absent or not marked. If in the lower extremity, a lameness passing off and recurring; if in the spine, a certain stiffness of posture and movement may be noted early. Muscular wasting of the affected limb, stiffness and muscular spasm in the joint cases, and later local swelling and local or referred pain may be marked; it occurs characteristically as night cries in children; when morbid products are under tension pain is severe. Later, abscess and sinus formation, intoxication, and secondary infection with pus germs cause general deterioration and may cause septic symptoms or waxy visceral changes. In the joint cases characteristic limitation of motion and deformity are striking features. Recent studies have confirmed C. F. Taylor's conclusion of a generation ago that bony ankylosis is rare and late. Many cases recover with or without treatment and a considerable number recur. Ely believes that recurrences are rarer when abscesses have discharged, and some of the late German statistics show poorer results in abscess cases that have not discharged.

TUBERCULOUS RHEUMATISM

Much has been written in France by Poncet, Leriche, and others attempting to connect joint and other painful affections in tuberculous subjects with the specific irritation or infection of

tuberculosis. Poncet tries to bring a wide range of affections under this category, and the matter has been much discussed in France and Germany in a voluminous literature. In the class of cases under consideration increase of pain and swelling sometimes follow the injection of tuberculin. The real facts in the case are not yet fully evident. In an experience of 6000 pulmonary cases Raw found no case of "tuberculous rheumatism," but he has seen three cases of severe polyarthritides in glands of the neck; in these the joint effusion produced bovine tuberculosis in test animals.

DIAGNOSIS

In spite of the valuable help afforded by the newer methods, especially the tuberculin test and the röntgen ray, the main reliance must still be on the clinical picture, which is usually sufficient to justify an extremely probable diagnosis except in very early cases. It is probable, however, that there are a good many cases of mild chronic infection of various kinds which masquerade as bone and joint tuberculosis.

It must be confessed that mistakes in the early diagnosis are the rule rather than the exception among the profession at large. The reason why such a large proportion of cases are diagnosed and treated in general practice as "rheumatism" seems to be because of insufficient acquaintance with the clinical features of joint disease or lack of thoroughness in examination rather than the absence of laboratory tests. Ely and others have shown the large numbers of errors in diagnosis in bone and joint disease revealed by pathological study of specimens even in carefully observed cases, which is, moreover, the experience of all joint clinics. Cabot in a series of autopsies at the Massachusetts General Hospital found 17 cases of tuberculosis of the spine in adults, only three of which had been diagnosed during life.

Much of the uncertainty and confusion in diagnosis arise from the failure to realize clearly just what it is that one wishes to find out. There are different kinds and refinements of diagnosis. One must first locate the lesion. This is not always as easy as it sounds, for in Pott's disease we may have pain in the abdomen or legs, in hip disease pain in the knee. Having located the disease, one must ascertain what tissues are affected, where and how much, whether the disease involves the joint, is in the neighboring bone, or in the soft parts. Then one must diagnose the pathology of the affection, and whether it is active or healed. One must also consider whether the lesion fully accounts for the symptoms. Brackett in an admirable paper

emphasizes the following important points: Tuberculous bone and joint disease is usually unifocal, remissions are usual, development slow, residual symptoms persistent, pain not prominent, swelling synovial, temperature normal or nearly so, except in cases with secondary pus infections.

A clear röntgen plate gives valuable information, but a poor plate is often misleading. One should remember that even a good plate may require expert reading, and that a plate is often negative in early cases, though it will usually show bone atrophy.

A plate is often misleading on the question of ankylosis. Unless individual trabeculae can be traced from bone to bone, the diagnosis of bony ankylosis, or even of mobility, cannot be made from the röntgen plate. The fluoroscope is not only valueless but misleading in joint work.

Tuberculin brought in contact with the tissues causes a specific reaction in human beings who have or have had local tuberculosis. The commonest tests are the Calmette conjunctival test, the von Pirquet vaccination test, and the Moro inunction test. The Calmette test is no longer popular on account of damage to the eye in certain cases. The von Pirquet test is much used and is reliable in a high percentage of cases.

As the number of cases that have become more or less tuberculized but remain without symptoms, and of healed tuberculosis, become rapidly greater with age, the positive reaction in the older children and adults is often without great clinical significance.

Monrad states that a negative von Pirquet excludes tuberculosis with 97 per cent certainty. He found in a long series of cases that the von Pirquet and Moro tests were concordant. A positive reaction during the first year indicates active tuberculosis; in the second year active tuberculosis is indicated in six-tenths of the cases, and between two and five years in two-thirds; over ten years about two-thirds of the positive reactions are due to inactive lesions.

Tuberculin injected subcutaneously causes in tuberculosis a rise of 2° F. or more within 48 hours, accompanied by malaise and constitutional disturbances; but far more important in the bone and joint cases are the focal symptoms, increased pain, tenderness, and swelling in the affected joint (Baer and Kennard, Waldenström). This is the most reliable tuberculin test in bone cases, but may not always be entirely harmless. In many cases the use of the Wassermann test to exclude syphilis is far more important than any tuberculin test, and a good clinical knowledge of

bone and joint diseases is far more important than either; for instance, a scoliosis or rachitic spine may in the vast majority of cases be easily distinguished from a tuberculous spine by a trained observer from the symptoms, history, and physical examination, or even by the latter alone.

The infection of a guinea pig by the injection of diseased material is a valuable test. Hagemann has found that characteristic local reaction occurs when tuberculous fluid from a human being is injected into a sensitized guinea pig. Wolfsohn's article contains a discussion of biologic reactions based on 264 recent papers.

The finding of tubercle bacilli or of tubercles in tissues removed at operation is of course of positive value. Other diagnostic aids are the finding of tubercle bacilli in the blood (Kräbber) and in the urine and feces. Keller finds the coagulation time of the blood prolonged to 6 or 7 minutes in bone and joint tuberculosis.

In the differential diagnosis the various infections, including rheumatism—a thoroughly discredited term—neuritis, tumors, rachitis, and scurvy must be considered. Indeed, the list of diseases for which bone and joint tuberculosis has been and is being mistaken is a very long one.

PROGNOSIS

Prognosis as to life is good in the majority of cases. It is distinctly improved by good treatment. It is not so good in infants and adults as in children. It is graver in the spine and large joints and in multiple lesions. It is probable that the dangers of abscess formation and secondary septic infections have been exaggerated. Under good management abscesses and sepsis are often prevented and are usually curable. As to joint function the prognosis is serious; recovery usually takes place with limited motion or a stiff joint, which may, however, be capable of weight-bearing and of great usefulness. Many cured cases marry and have healthy children. It is rare that such children develop bone or other tuberculosis if living under hygienic conditions.

PREVENTION

In prevention a milk supply free from infection from the herd or from dust is important; infected butter, cottage cheese, and ice cream should be eliminated. In view of recent revelations it is clear that these measures can be secured only through proper legislation and rigid official inspection of farms, dairies, and milk products. Of the greatest importance is the avoidance of close association with consumptive people in the family. The danger is greatest in advanced

cases when the sputa are neglected. Close and prolonged association in small dark rooms, and even sleeping in the same bed, are common in the tenements. Advanced cases that cannot be properly cared for at home should be segregated. Sputa should be burned or disinfected and infected rooms fumigated. Cleanliness, freedom from flies and dust, and a free, active, hygienic life with sunshine, fresh air, ample nourishment, and the avoidance of alcohol and narcotics are the great safeguards; the best defences are those thus provided by the general vigor of the organism. Tenement, school, shop, factory, business, industrial, and even country life as usually conducted cannot be said to be favorable, and periodic examinations should be made.

TREATMENT

The treatment is general, local, and the management of complications and deformities.

In spite of some statistics, like König's, tending to show that in a considerable proportion of cases the disease is isolated, the conviction has been gaining ground that one must recognize and treat the general condition. Since there has been a strict and prolonged hygienic and tonic management, the results have been much better; this is, however, also true of many non-tuberculous conditions. It is also true that when bone or joint tuberculosis is cured by operative or other local means the health improves. A formal fresh air and sunlight treatment, as elaborated at Berck near Boulogne, Leysin in Switzerland, Sea Breeze at Coney Island, Southampton, N. Y., and elsewhere have constituted the most important advance in the general management of bone and joint tuberculosis in a generation. It should not be forgotten that all these cures use joint fixations and respect the limitation in regard to exercise demanded by the diseased joint. There is a real conflict here between the general and local requirements. Vigor demands exercise, a tuberculous joint requires rest, and abundant experience has shown that the local requirement takes precedence during the active stage of the disease. The fresh-air and sunlight cures at Berck and Leysin include not only local rest but usually long periods of recumbency and often other measures. The Hôpital Maritime at Berck, with over a thousand beds, was founded the middle of the last century. Joachimsthal reports that under Ménard 300 beds are reserved for bed cases and 200 beds for those who can be out of bed a few hours a day. Calot, at Berck, with 300 beds combines injections with recumbency and fresh-air and orthopedic treatment.

Although the fresh-air treatment for joint tuberculosis was emphasized in this country in the sixties by Davis, Sayre, and C. F. Taylor, whose endeavor was to abolish or lessen recumbency, and not so much increase activity, which was carefully restricted, as enable the patient to get the benefit of more air and sunshine as well as to protect the joint, they soon found that it was necessary to go back to short or prolonged periods of recumbency in many cases. The reports from Berck and elsewhere and the success of a more formal fresh-air technique in the treatment of pulmonary cases resulted in the establishment of many seashore and country homes and the introduction of flat roofs and balconies in hospital and sanatoria. The introduction of sleeping porches at the Southampton Home gave distinctly better results. Experience has shown the beneficial results of aërotherapy, not only in sanatoria at the seashore and at various levels inland, but also in the home, and even in the tenement (H. L. Taylor). Willard has wisely remarked that it is far better to take 25,000 daily doses of fresh air than 3 of drugs.

Sunlight therapy, under the leadership of Rollier, probably marks the greatest advance in the treatment of these cases in many years. While Rollier lays stress on a considerable elevation (Leysin about 4000 feet), Revillet, Vulpius, and others report just as good results from the seashore or comparatively low levels.

Aschenheim found lymphocytosis of the peripheral blood after an hour's exposure of the skin to direct sunlight. Sunlight causes peripheral or local hyperæmia and is bactericidal. Di Cristina finds that oxidation and metabolism are markedly stimulated. The benefit, other things being equal, is proportional to the amount of tanning produced. Hagemann believes that red rays as well as the ultra-violet are therapeutic, and reminds us that the exposure of the skin to air is in itself beneficial.

Rollier begins by gradually exposing the affected area for five minutes and increasing the area and the time until a complete exposure is obtained for several hours. Patients may have their heads protected by shade hats and the eyes by shades or goggles if necessary; wind, damp, and fog are unfavorable, but patients will stand astonishingly low temperatures in a state of complete nudity. The children under the writer's care at the Southampton Fresh Air Home have been exposed entirely nude for 6 hours a day during the past summer with the greatest benefit, and no complaint on their part.

Rollier's extraordinarily favorable results in

cases incurable by the usual methods have been verified by Bardenheuer and other eminent observers.

Some clinicians like Bernhard give a local exposure only, with a maximum of 3 or 4 hours daily, and believe that in this way a greater local effect on the focus is secured. All warn against burning the skin by too energetic treatment. This, we have found at Southampton, may be avoided by using talcum powder freely the first week.

It is probable that there may be some value in using electric light to supplement the use of sunlight or when sunlight is not available; Hagemann reports good results from the use of quartz lamps.

Our present knowledge of the value of fresh air and sunlight in the treatment of tuberculous joint disease makes it imperative that hospital construction should be profoundly modified with this in view, and that chronic and convalescent cases should be cared for in country hospitals.

Diet should be generous with an ample supply of milk and eggs, fresh vegetables, fruit, and digestible fats. No first-class orthopedic surgeon places any reliance on the use of drugs.

TUBERCULINS AND SERA

The number of tuberculins, vaccines, and serums is very large and the literature voluminous, but the practical results in the treatment of tuberculosis of the bones and joints are disappointing. While many report improvement, the evidence that such improvement is greater than would have taken place under similar conditions without tuberculin is not convincing, and the eager, almost frantic, search for new tuberculins and sera continues undiminished and is in itself evidence of unsatisfactory results up to the present time. The latest phases of the question are extensively treated by Bandelier and Roepke, and the present status of tuberculin therapeutics may be judged from the Transactions of the Fifth Annual Meeting of the British National Association for the Prevention of Tuberculosis, 1913. In the appendix, Pannevitz, secretary of the International Antituberculosis Association, outlines the views of German specialists. The views are conflicting, but the consensus of opinion shows that tuberculin may be harmful in early, febrile, or terminal cases, and Rabinowitsch in the above report states that he has found that virulent bacilli enter the blood after injections sufficient to provoke a general reaction, and may disseminate the disease. Painter,

after a full discussion of work done up to 1911, suggests that immunity in surgical tuberculosis is largely a local affair, as healing and advancing lesions are often found in close proximity; he finds that Wright's opsonic index is uncertain and the value of tuberculin unproven. Czerny has never seen greater improvements under tuberculin than in other cases without. Waugh, after five years' trial of Koch's new tuberculin and Wright's bacillary emulsion at the London Hospital for Sick Children, has abandoned tuberculin in all forms of surgical tuberculosis.

The late reports on the much vaunted Friedman's culture, ending with the report of the committee of the United States Public Health Service just out, are uniformly unfavorable. It is neither curative nor harmless.

Marmorek's serum has been much extolled. Glaessner says that among 70 critical papers only 11 were unfavorable.

Many enthusiastic reports of Spengler's I K serum are to be found, but Bandelier and Roepke consider Spengler's serum valueless and Marmorek's as still on trial.

There is no evidence convincing to the writer that any form of vaccine or serum is of practical value in bone and joint tuberculosis, and there is much evidence that improper selection of cases or dosage may be harmful. As Ridlon picturesquely puts it, "Tuberculin in harmless doses is useless; administered in larger doses it is both dangerous and harmful."

LOCAL TREATMENT

Fixation by splints is still the main reliance to put the diseased joint at rest and protect it from strain and injury. Ely believes that fixation, whether by splints or operation, acts by causing fatty degeneration of the red bone-marrow, converting it into yellow marrow, and causing atrophy of the synovial membrane, thus rendering both tissues unfavorable to the growth of bacillary foci. It cures by starvation. Fixation by simple steel splints for the lower limbs, and neck halters for the shoulder and elbow, was advocated and successfully employed by Thomas more than a generation ago, and has gained ground up to the present time through the popularization of plaster of Paris splints by Sayre, Gibney, Phelps, and others, and since Lorenz showed the excellent results obtainable by fixation without traction and advocated the desirability of attaining ankylosis rather than motion. With fixation is often combined recumbency, or suspension of the limb, by the use of a high shoe on the well limb and crutches. In

infants and spinal cases the Bradford gas-pipe frame or Whitman's modification does good service.

High, long continued traction, combined with recumbency or suspension of the limb as advocated by C. F. Taylor, was a great advance over previous methods, but has been rapidly losing ground and is now reserved for acute cases, and even in hip cases has been practically superseded by fixation. Very few traction hip splints are now applied by orthopedic surgeons, and in the inactive and painless stages weight-bearing is allowed with fixation by the short plaster spica (Lorenz, Goldthwait). Judgment is required, but experience has shown that in the majority of cases free from pain and active joint symptoms weight-bearing with fixation is often advantageous.

Dickson and Willard in their recent statistical paper based on 200 cases of tuberculosis of various joints treated conservatively and observed five years, report 142 arrested, 45 still under treatment, and 13 deaths. As to deformity, there were 100 good, 60 fair, and 40 poor results. The earlier the treatment was begun the better was the result.

Bier's congestion with the elastic band has not proved an important advance in the treatment of tuberculous joint disease. It seems to be of some value in some elbow and wrist cases. Bier himself now advocates giving iodide of potassium gr. xv t.i.d. in conjunction with congestion in order to prevent unpleasant consequences.

Counterirritation, much used in the past, seems to be without value. The injection of various substances into or near the focus of disease has been much used in Europe, especially in France and Germany. Calot and others have persistently extolled its merits without convincing American surgeons. Iodoform in ether, oil, or glycerine has probably been the most popular injection. In a recent paper Brackett, one of our best observers, advocated the use of sterile iodoform oil under tension in early cases of tuberculous synovitis, but the injection method is not popular in this country. Redard prefers a 10 per cent iodoform oil injection, while Calot uses a camphor naphthol solution as well as iodoform. This question was discussed at length at the French Surgical Congress, 1909.

RÖNTGEN RAYS

Reports of the beneficial effect of röntgen rays upon tuberculous joints, especially in synovial cases and in intractable cases with sinuses, are becoming frequent.

Kirmisson, according to Wilson, used the rays in 1898 in bone and joint tuberculosis, and he and others reported cures.

Iselin has perfected the technique which consists in raying the joint on four sides through aluminum screens; he reports on 800 cases. In multiple foci only those foci exposed to the rays improved. He is certain that many cases were saved from amputation. Increase of weight was frequently noted. He warns against burning the skin and interfering with growth at epiphyses. The writer has seen cases riddled with sinuses and apparently hopeless recover under röntgen-ray treatment with perfected technique and considers it second only to the sun treatment in such cases. Negative results have also been reported (Fründ), but the proper technique has been developed very recently.

The foregoing comprise the standard conservative methods of treating bone and joint diseases, and it is to be noted that the use of conservative, as contrasted with operative, methods for children has steadily increased during the past generation. Portable appliances with traction brought into vogue by the American pioneer orthopedic surgeons largely displaced recumbency and the rather crude surgery of the time. Later, operative technique and joint surgery were developed and the attempt was made in England (Wright) and Germany to cure joint diseases by early excision. The results were disappointing so far as children were concerned. In adults, as will presently be seen, conservative treatment is less satisfactory, and radical operation is the standard procedure. In the last decade there has been a marked tendency to discard complicated appliances and rely on fixation, with or without weight-bearing, reserving traction for exceptional cases. The amount of residual stiffness is determined rather by the extent and duration of the pathological process than by the fixation. The perfection of the air and sunlight treatment, and also of radiation, promises to usher in a fresh advance of fundamental importance. It is to be noted that under the sun and ray treatments the joint makes a better recovery, there is less final destruction and more motion, even under less strict orthopedic treatment, while major surgery is rarely necessary.

TREATMENT OF ABSCESES AND SINUSES

König and others have found that the mortality was nearly twice as great in cases of knee tuberculosis complicated by suppuration as in the non-suppurative cases, and suppuration and secondary infection have been and still are considered grave

complications by most. This fear has not been generally shared by orthopedic surgeons, since under good hygienic and orthopedic treatment of the affected joint the majority of cases do well. Still even under these conditions there is a considerable percentage of abscess cases that are prolonged and recurrent, and a smaller percentage that go on to waxy degeneration, or exhaustion, and end fatally. The fear of an open abscess lies at the root of the French injection treatment, and appears to us exaggerated; at the same time the very large number of new methods constantly being brought forward is in itself an indication that the usual treatment has not been found generally satisfactory. There has been much discussion as to whether tuberculous abscesses should be opened at all or not, and if they are, whether they should be injected, curetted, or let alone. It must be premised that with careful orthopedic and hygienic treatment, abscesses are rarer, of shorter duration, and are frequently entirely absorbed without opening. It is the consensus of the best opinion that a cold abscess when deep should be let alone; a hot or infected abscess should be freely drained at once. A certain number of cold abscesses are absorbed after aspiration; but the method is unsatisfactory, as necrotic shreds and coagula, the elements most needing removal, are too large to pass through the needle. Evacuation through a small incision with immediate closure, as practiced by some, seems to the writer inferior to incision and drainage. After observing and trying many methods the writer favors opening a cold abscess when superficial and subsequent sterile dressing with alcohol cleansing of the skin. The use of drainage tubes is to be avoided; the writer has seen many abscess cases recover after the removal of drainage tubes. With the possible exception of iodine solutions for a short time in exceptional cases, there appears to be no advantage in antiseptic or digestive injections with abscesses and sinuses, and the results are much worse after curettage of the abscess walls. If there is a sequestrum or other indications for operation on the bone or joint, they should be considered on their merits rather than from the point of view of the treatment of the abscess alone. In one position a cold abscess may constitute a surgical emergency, namely, in the posterior mediastinum, in cases of high dorsal Pott's disease. Such an abscess may require quick drainage to prevent suffocation from pressure on the bronchi. This may be done by excising the proximal end of a rib and by blunt dissection close to the vertebral body.

Another formidable complication which is frequently taken as an indication for surgical interference is pressure paraplegia in Pott's disease. It was clearly shown by Taylor and Lovett in 1886 that this complication was due to the pressure upon the cord of thickened membranes, abscesses, or granulations, and very seldom to bone pressure, and that the prognosis under recumbency and brace treatment was excellent. Although laminectomy has been much used, it has proved on the whole unsatisfactory, and has been practically discarded by those who have had the most experience. Robert Jones states that 97 per cent of the cases of Pott's paraplegia recover under conservatism and treatment of abscesses. Of 132 cases Menne in 1912 reported 56 per cent improved or cured after laminectomy. In view of the clinical course of Pott's paraplegia, we must believe that many of these would have recovered spontaneously.

Fresh-air treatment, heliotherapy, and radiotherapy undoubtedly constitute the greatest advance that has been made in a decade in the treatment of persistent suppuration complicating bone and joint tuberculosis, and will doubtless modify and sometimes replace both orthopedic treatment and surgery. They are of primary importance in many cases, and the evidence is convincing that they can often accomplish what no other treatment can.

The injection of Beck's paste—bismuth subnitrate 30 parts, vaseline 60 parts—scored many successes soon after its introduction in 1908; but soon reports of failure, bismuth poisoning, and other unfavorable results began to appear, and the search for substitutes began. Ridlon and Blanchard, Salatich, and others have secured results just as good with vaseline and other pastes without bismuth. Beck in his latest paper still claims much for his method, but enthusiasm for the treatment has decidedly waned. Sever and others report good results from Bier's suction treatment in sinuses.

Injections of solutions of iodoform in ether, oil, or glycerine into abscesses and sinuses had a great vogue some years ago, but the treatment appears to be less popular at present except in the form of the Mosetig-Moorhof paste for use in bone cavities or after joint operations (Nové-Josserand and Rendu). Bérand claims better results from filling the cavity 48 hours after the operation. Niblett reports excellent results in the service of Tunstall Taylor from the bi-weekly injection of 2 drams of old tuberculin 1:500 into the depths of old sinuses. This has a stimulating effect on sinus walls.

OPERATIVE TREATMENT

In the last decade or two the treatment of children has on the whole become more conservative, the treatment of adults more operative. The problem in the adult is different from that in the child both clinically and economically, and an early radical operation is usually the most satisfactory solution.

In children conservative treatment gives satisfactory results in the majority of cases, and radical operations are reserved for cases with a definite circumscribed extra-articular focus and for intractable cases in which conservatism has failed. Excision of the hip is done on probably less than 5 per cent of the cases of hip tuberculosis at the Hospital for Ruptured and Crippled, New York, and the Boston Children's Hospital. Knee excision in children under 14 is rejected here, except as a life-saving measure. Very early excision in children as practiced at one time by Wright of Manchester, and others has proven unsatisfactory.

General surgeons have favored radical operations more than orthopedic surgeons, but though orthopedic surgeons have become better equipped on the operative side, the treatment of children is more, rather than less, conservative, and with the development of heliotherapy is likely to become still more so. One must also make a distinction between bone and joint surgery, for in tuberculosis of the shaft and in foci not involving joints, and these are commoner than is usually supposed, surgery is and should be freely employed.

These two factors enter largely into the views and practice of surgeons, together with others; namely, the hospital, mechanical, and other facilities at the disposal of the surgeon, and personal aptitude and training. It is natural that a man who has been trained as an operator and has operating facilities should, other things being equal, have a preference for operating, and that a man skilled in conservative and mechanical treatment should equally prefer conservatism. Bone and joint surgery has now reached a point where it is realized that the surgeon who is to treat such cases should be trained in both methods. The mechanics have become simplified, and major surgery in children is largely reserved in France and America and by many of the best English, German and Italian surgeons to cases presenting special indications. In looking over recent literature, however, the writer has been surprised to find that some surgeons of high rank, like Garré of Bonn, and Stiles of Edinburgh, still perform excisions in large num-

bers on young children, and both recommend knee excisions in very young children as a standard procedure.

Tubby in his monumental work on disease of the bone and joints is conservative in regard to children, as is also Robert Jones, probably the greatest living bone and joint surgeon, though operating freely to meet special indications. Those surgeons who, like Murphy, draw their experience largely from adults, will rightly have a more operative point of view. Hoffa was conservative, as is Lorenz; in fact, the orthopedic surgeons are nearly all conservative, while the general surgeons, especially in England and Germany, seem to be divided in their tendencies.

The best orthopedic authorities are practically unanimously in favor of rest, fixation, light and air treatment for children with tuberculous joints, reserving radical operations for diseases of the shaft, for foci near the joint, where the joint is not seriously involved, or for cases where conservatism has failed. For adults, removal of the focus, whether by excision or otherwise, is generally recommended. Curettage or other partial operations are often worse than useless. The surgical ideal is the complete removal of all diseased tissue. This, however, except in the case of a small isolated focus or in disease of the shaft, is probably impossible, and according to the views of Ely it is only necessary in doing a resection to oppose comparatively healthy bone surfaces and produce ankylosis, after which the disease will die out in adjacent tissues.

Stiles gives the following recent statistics of the results in 205 resections of hip, knee, elbow, and ankle: good or useful limbs, 43 per cent, bad 3 per cent, subsequent amputation 10 per cent, deaths 12 per cent, not traced 31 per cent.

Garré reports 261 hip cases treated, with 65 resections; of these one-third died in the hospital against 51 per cent reported by König, but there were 6 more deaths after discharge, making a total death rate of 46 per cent. About half of the resections gave functionally good results, although three-quarters walked without crutch or cane. In the 109 cases treated conservatively there were only slightly better functional results, and the deaths included about one-third of the cases. Over one-quarter of the cases were considered to be purely synovial, but of 13 synovectomies only one was satisfactory.

In the knee 133 cases were treated purely conservatively, with good results in about one-half. After 188 resections there were 14 deaths, but in the remaining cases there was a pathological cure in 92 per cent.

In a third of the cases excised before 13 years of age there was a fixed flexion at an angle of 150 degrees or less.

Garré reports good results in tuberculosis of the ankle from removal of the astragalus or excision of the joint. Function is better in children than adults, who are apt to be left with a valgus foot. Fraser has pointed out that the disease begins in the neck of the astragalus in the majority of cases. Sever finds the localization in the astragalus in 74 out of 252 cases, and after extensive experiences advises conservatism in children. The reviewer has found that many, if not most, cases do well under conservative treatment, but that some of the severer cases are quickly cured by the removal of the astragalus even in very young children.

A report of late authoritative opinions with the literature on resections of different joints may be found in Whitman's, Lange's, Tubby's, and Fraser's handbooks, and in the admirable statistical papers from Garré's service in the *Beiträge zur klinischen Chirurgie* for 1913.

Amputation, formerly extensively practiced in tuberculous joints, is now used only as a life-saving measure after other means have failed.

OPERATIONS FOR DEFORMITY

It is now generally realized that disabling deformities can and should be prevented by proper fixation during the active stage of the disease.

If the patient presents during the active stage with deformity, traction in bed, or the application of successive casts, will usually overcome it. So much of the deformity as depends upon muscular spasm owing to active joint symptoms may be overcome by anæsthesia, which, however, is seldom necessary. The use of forcible correction during active disease is most unsatisfactory. This is well illustrated by the failure of the Calot method of forcible correction of the kyphos in Pott's disease; spinal deformity may, however, be improved by leverage splints, the frame, or by jackets.

Fixed deformities may be corrected by osteotomy, which is the preferable method and gives better and more permanent results than forcible correction, besides being less dangerous. Tenotomies of contracted tendons are added if required. At the hip an osteotomy near the level of the lesser trochanter is the standard procedure for flexion, adduction, and rotation deformities. Jones prefers to do an osteotomy of the femur in two steps: at the first operation the femur is chiseled two-thirds through; two weeks

later it is broken and the deformity corrected. Few advise this. Osteotomy may be done with a small osteotome subcutaneously, or by open operation. Brackett advises open incision through the space between the tensor vaginæ femoris and the gluteus medius and a curved division of the bone with a narrow osteotome to avoid splintering and displacement.

Fixed flexion at the knee usually requires division of the hamstrings and an osteotomy above the condyle. If severe, an additional osteotomy below the tibial tuberosities may be done or a wedge taken out of the joint — cuneiform resection. Osgood has devised a very ingenious plastic operation above the condyles to overcome fixed knee flexion.

It is not generally realized that practically all angular deformities may be corrected, even in adults, by comparatively simple and safe operations. Many more such operations should be done than has heretofore been the custom.

ANKYLOSING OPERATIONS

Strong corroborative evidence that ankylosis of a diseased joint is beneficial or curative aside from the removal of diseased tissue is afforded by the new operations on the spine, in which the operative field is entirely outside the diseased area, and in which beneficial effects can only be due to fixation.

Hibbs' operation, published in May, 1911, is a plastic operation on the denuded spinous processes and laminae. Albee (September, 1911) splits the spinous processes and inserts a graft from the tibia. In the cervical spine Don denudes from the seventh cervical to the second dorsal and inserts the appropriate length of bared rib.

The most recent operation is that devised by Dr. George W. Hawley, of Bridgeport, Connecticut. It has been performed several times but has not yet been published. This operation consists in dissecting up the supraspinous ligament three-eighths of an inch wide, two vertebræ beyond the diseased area, leaving it attached at one end; the spines are then split and a scale of bone sliced from each and used as an intervertebral bridge; the loose supraspinous ligament is then laid in the groove and stitched in place and the fascia and skin sewed over it. In spite of the incompleteness of the early reports, all of these types of operations, three of which have been performed by the writer, seem to give a large percentage of favorable results in properly selected cases, and to constitute a distinct advance in the treatment of this very serious and obstinate

affection. It should not be forgotten, however, that hygienic and orthopedic methods give excellent results in a great many cases, even in adults, the main drawback being the long restriction of the patient's activity.

MOBILIZING OPERATIONS

There is no doubt that a strong stiff joint free from pain is more serviceable than a more or less mobile joint that is weaker, more sensitive, and more vulnerable. The disability from stiffness is usually assessed both by surgeons and patients above its real value, and both seem inclined to risk much in order to secure a mobility of doubtful benefit. For this reason mobilizing injections and operations have come greatly into evidence in the last few years. Many of them, in the writer's opinion, should never have been performed, and many have given disappointing results; there have, however, been a moderate number where the result has been such as to satisfy both patient and surgeon. In the case of ankylosis of the jaw or of double symmetrical ankylosis, as of both hips or both elbows, a mobilizing operation is more urgently required. The operation should only be performed in cured cases; those of traumatic origin give the best results.

Payr and Helferich have recently given long and rather favorable reports of results from the interposition flaps of fat and fascia, muscle, or other soft tissues; considerable bone should be removed so that there shall be no pressure necrosis, and the flap is sometimes pedunculated and from the neighborhood of the joint, but it may be a free transplantation.

Murphy has been working along these lines for several years with many excellent results, and some failures. Baer gave a report at the 1914 meeting of the American Medical Association of 52 cases, in which chromicized pig's bladder was used to prevent adhesions after a mobilizing operation; 71 per cent had movable joints 18 months or more after the operation.

Osgood, in a very sane paper in 1913, reported on 16 cases and 17 joints; there was one death; 9 joints showed stiffness, or less than 10 degrees active motion, 7 joints over 10 degrees. He is inclined to believe that unilateral cases of painless bony ankylosis of the major joints should be submitted to arthroplastic operations only after a free discussion with the patient and realization on his part of the prolonged and often painful after-treatment and the somewhat uncertain nature of the results. In every case there was a slight discharging sinus, sometimes coming on as

late as three weeks after the operation and often persisting for months.

Tunstall Taylor reports fair results from arthroplasty with injection of yellow wax 1 part, lanolin 5 parts; later, however, he advised one-half the amount of wax. Allison and Barney concluded from an experimental study on dogs that there is no advantage in a pedunculated transplant. The prevention of adhesions depends upon keeping the denuded joint surface apart by a non-irritating absorbable transplant. Whole joints have been transplanted by Lexer and others, and while they sometimes heal in, they act as tissue transplants, and the final result in most cases is stiffness.

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ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Baldwin, A.: The Prevention of Discomfort After Operations. *Proctologist*, 1915, ix, 7.
By Surg., Gynec. & Obst.

The post-operative treatment of hæmorrhoids, resection of the rectum, abdominal wounds, and hernia is discussed. Baldwin believes that the prevention of shock by nerve-blocking is essential, and it also relieves the patient of much post-operative pain. The care of hæmorrhoidal cases resolves itself into the relief of pain after operation.

The author gives his method in detail. He uses a local anæsthetic powder and oil injections, and puts the patient on a semisolid diet. Great care is used to prevent infection by the use of preliminary treatments and antiseptics.

The elimination of fear is an important factor in the prevention of shock. His patients are surrounded by cheerful attendants and the operative field is simply prepared.

In closing abdominal hernias by filigrees, the author recommends placing several short pieces in the abdomen instead of a long one.

EDWARD L. CORNELL.

ANÆSTHETICS

Briggs, W. T.: Anæsthesia in Urology. *Nashville J. M. & S.*, 1915, cix, 64. By Surg., Gynec. & Obst.

Briggs reviews the report of Ravosini, who since 1907 has used spinal anæsthesia in all genito-urinary operations. For some time he used stovaine-adrenalin phiolen with strychnia sulphate according to Jonnesco's method, but now he uses only stovaine and adrenalin.

In adults the maximum dose for kidney operations was 5 cg.; in children 1.5 cg.; in women and debilitated male adults 3 cg. In 8 cases anæsthesia did not develop; in 23 anæsthesia was incomplete.

The accidents worthy of mention were the following: In one case there was complete paralysis of the bladder lasting two weeks; collapse after operation in three very old patients; paralysis of the eye muscles in two cases, lasting two and four weeks; right hemiplegia and aphasia, which lasted twelve days.

For operations on the bladder and prostate 3 cg. was usually sufficient. Spinal anæsthesia was used

523 times in the following operations: kidney operations 208, prostate 56, bladder 116, perineal operations 12, external genitals 131.

Anæsthesia was successful in all, did not cause albuminuria, was seldom followed by headache, and vomiting rarely occurred. No fatalities occurred and the bad after-effects always disappeared.

H. G. HAMER.

Boit, H.: Anæsthesia of the Brachial Plexus According to the Method of Kulenkampff on the Basis of 200 Cases (Die Anästhesierung des Plexus Brachialis nach Kulenkampff auf Grund von über 200 Fällen). *Beitr. z. klin. Chir.*, 1914, xciii, 336.
By Surg., Gynec. & Obst.

The author reports 202 cases in which the bacterial plexus anæsthesia according to the method of Kulenkampff was employed. In 160 cases the author performed or supervised the administration of the anæsthesia himself; in 42 it was administered by students. The technique of Kulenkampff was used; adults received 20 ccm., children under ten years old 10 ccm. of a 2 per cent normal salt solution.

The oldest patient was 77 years, the youngest 6 years. Of the 160 cases which Boit personally observed, no serious injury occurred or persisted as a result of the anæsthesia, although in a number of cases the anæsthesia was repeated several times within one week. Among the other 42 cases, a complete paralysis of the arm resulted once. After five weeks the paralysis was still present. It was attributed to the construction of the Esmarch bandage employed.

The plexus anæsthesia, however, resulted in minimal toxic and traumatic injury to the trachial plexus. If degenerations are present in the nerves, slight injuries may result in severe peripheral paralyses, to which Oppenheim has already alluded. The author therefore agrees with Haertel and Keppler that in manifest disturbances in the plexus the method should not be employed. The fact brought out by Haertel and Keppler, that in addition to the anæsthesia a transient paresis of the phrenic nerve on that side occurs, is concurred in by the author. He states that the paresis sets in about fifteen minutes after the injection and usually disappears three or four hours later. Respiratory disturbances were not observed.

In one case the patient complained, immediately after the injection, of respiratory disturbances on the side of the anæsthesia. An immediate X-ray examination showed a semiparesis of the diaphragm, with paradoxical breathing. After 24 hours this had receded, and a second examination showed only a slight lagging of the diaphragm on that side. Two similar cases occurred among the 42 which the author did not personally observe, one in a young man of sixteen years, in whom the paresis was still present to some degree after forty-eight hours. Immediately after the injection respiratory difficulty and dyspnoea set in.

The almost regular semiparesis of the diaphragm lasting three to four hours is undoubtedly due to the diffusion of the anæsthetic to the phrenic nerve, and probably along the scalenus muscle. The sudden appearance of the paralysis undoubtedly was due to the injection of the anæsthetic directly into the phrenic nerve. The fact that it persisted 24 to 48 hours is proof of injury, probably by the needle.

Lesions of the pleura, as reported by Keppler and Haertel, did not occur, for the reason that the palpating needle was never forced medially from the first rip into the deep structures.

Transient paresis of the sympathetic of the neck, with contraction of the pupil and the orbicularis oris, occurred quite frequently, especially in thin individuals, but never caused any subjective symptoms.

If a hæmatoma occurred at the site of injection, no symptoms resulted, and within one or two days it would be absorbed. None of the patients complained of late pains at the site of injection and infection never occurred.

The author employed plexus anæsthesia in all cases where surgical intervention became necessary on the upper extremity. Operations on the upper part of the humerus could be performed painlessly. Of the cases in which he personally employed the anæsthesia in only two did he have to supplement it with general anæsthesia; in nine cases the pains

were slight, so that the operation could be concluded, and in the remainder there was absolutely no pain at all. The setting of dislocations or of fractures is especially easy under this procedure, as absolute muscular relaxation is obtained. The author corrected twelve dislocations of the shoulder without pain. In one instance the dislocation was three days old, and in one eight days.

According to his experience not much significance need be attached to the paresis of the phrenic nerve, as it recedes usually within three or four hours. Bronchial and pulmonary complications never occurred, even if bronchitis, lobar pneumonia, or chronic pulmonary tuberculosis was present at the time the anæsthetic was employed. In these cases, even if a phrenic nerve paresis occurs during a necessary operative interference, the plexus anæsthesia is to be preferred and is much less dangerous than a general anæsthetic. The three cases of injury to the phrenic nerve probably are due to the fact that the needle was directed too far medially and so struck the nerve. The nerve passes about 2 cm. inward of the site of injection below the sternocleidomastoid muscle and will not be perforated if the directions according to Kulenkampf are followed. Prolonged and irreparable injury to the plexus is theoretically possible and has been observed. Haertel and Keppler believe they are of toxic-traumatic origin; however, if they were of toxic origin they would undoubtedly be more frequent. The most important probably is the traumatic injury to the plexus, especially if coarse needles and reckless movements of the needle are made. He therefore advises very fine, short-pointed needles.

On the basis of his experience, the author believes that the plexus anæsthesia is a very valuable addition to our surgical technique and is even adaptable to the needs of the general practitioner, provided he will obtain sufficient practice in performing the simple technique and use care.

L. A. JUHNKE.

SURGERY OF THE HEAD AND NECK

HEAD

Davis, G. G.: Buyo Cheek Cancer, with Special Reference to Etiology. *J. Am. M. Ass.*, 1915, lxiv, 711. By Surg., Gynec. & Obst.

The author discusses the various constituents of the buyo chew, the habit and customs connected with it, and presents conclusions from a series of cases of cheek cancer occurring in the Philippine General Hospital.

The constituents of the "chew" are buyo leaves, betel nut, slaked lime, and tobacco. The slaked lime, which is obtained from sea shells, is used to give the "chew" a pleasant sweet taste, and, through its chemical action on the buyo leaf and betel nut, causes the oral mucosa to be dyed red and

the teeth black. The tobacco is also used to flavor the "chew."

To prepare the "chew" the buyo leaf is cut into three parts, slaked lime put on one, and then the three parts are folded longitudinally and wrapped around the betel nut.

The buyo chew has been used for several centuries in tropical lands. The earliest reference is in the works of Marco Polo, 1298 A.D. In the Philippines and Malay Archipelago fully 90 per cent of elderly persons chew buyo. It is chewed more extensively by women than men.

Forty-nine cases of this cancer are reported, 81 per cent of which give a positive history of using the "chew"; the average time of use was 35 years and the average age was 52 years. Seventy per cent of

the cases were women. The lime is believed to be the direct cause of the cancer, although the betel nut itself is an accessory, in that the use of the nut pure gives rise to small ulcerating areas in the mouth.

In every case questioned the site of the lesion was the place where the "chew" was carried in the cheek.

The first symptom is a small elevated nodule in the mucosa, which soon ulcerates. Pain in varying degrees accompanies this. A typical cauliflower growth soon follows, which bleeds easily upon irritation by the teeth or food. Infection and abscess formation are frequent. The teeth near the lesion soon fall out and the cheek is frequently perforated by the growth. General metastasis is rare, although the submaxillary glands are involved. The conclusion is that the lesion is entirely similar to an epithelioma or carcinoma originating from pavement epithelium.

The prognosis is poor even with operation. If taken early wide dissection and removal of the glands involved offer the only hope of cure. Later, merely palliative measures, as the curette and cautery, can be used for relief.

Buyo cheek cancer is a distinct disease of the tropics with a definite entity. Histologically, it is an epithelioma of the chronic irritative type. An educational campaign against buyo chewing is the best method of fighting the trouble, as surgical relief is far from satisfactory. PHILLIPS M. CHASE.

Babcock, W. W.: Osteoplastic Surgery of the Face.

J. Am. M. Ass., 1915, lxiv, 203.

By Surg., Gynec. & Obst.

Babcock outlines several effective methods employed by him for correcting facial deformities and replacing lost tissue, including depressed scars, saddle nose, skull defects, nasal stenosis, etc. In the case of depressed scars due to adhesion of the skin or subcutaneous tissue to the bone, he finds that bits of free homoplastic fat embedded subcutaneously at the site of the depression find ready attachment and permanently fill out the contour of the face. The fat is obtained from the subcutaneous tissue of the patient's abdominal wall.

In the correction of cases of saddle nose in which the bridge has been lost without destruction of the tip or alæ, a tibial transplant is removed, cut to appropriate shape, and slid into position in the nose through a vertical incision running up from the root of the nose to one of the wrinkles of the forehead.

The majority of these plastic operations can be performed under local anæsthesia.

ROBERT H. IVY.

Cushing, H.: Concerning the Results of Operations for Brain Tumor.

J. Am. M. Ass., 1915, lxiv, 189.

By Surg., Gynec. & Obst.

There are many individual standards for what is to be regarded as "recovery" from an operation for brain tumor. It is probable that not more than 5

per cent of patients are truly "cured." However, Cushing says, if satisfied with an alleviation of suffering, preservation of vision, and prolongation of life in relative comfort and usefulness, often for many years, certainly 50 or 60 per cent of all patients can thus be helped. It may be expected that 15 or 20 per cent of the cases will continue helpless from an uninterrupted progression of symptoms, and that a possible 10 per cent will succumb to the operation. Statistics as to the results of brain tumor operations are fallacious, because our present statistics, if they lead us back a few years, represent operations done before modern technique was perfected. Recent figures are instructive only from the point of view of immediate mortality. Cushing summarizes his results in 156 cases of brain tumor as follows:

	Cases observed	Operated cases	Times operated	Operative fatalities
Supratentorial cases.....	55	48	55	4
Hypophyseal cases.....	37+	37	42	2
Pineal cases.....	4	1	1	0
Cerebellar cases.....	32	29	36	5
Pontine cases.....	5	4	4	0
Pseudotumors.....	23	11	11	0
	156	130	149	11

Summary of 149 operative procedures:

Subtemporal decompressions, 41 — no fatality.

Osteoplastic craniotomies combined with cerebral decompression, 28 — 3 fatalities.

Osteoplastic craniotomy with attempted partial or total removal of the tumor, 24 — 2 fatalities.

Transsphenoidal operations for hypophyseal tumor, 17 — 1 fatality.

Suboccipital exploration and decompression, 22 — 3 fatalities.

Suboccipital operations with attempted partial or total removal of the lesion, 17 — 2 fatalities.

Cushing considers that in analyzing brain tumors the time has come to concentrate upon individual lesions in individual situations instead of grouping together all the operations for all tumors which arise anywhere in the cranial chamber. In this way only will technical facilities be increased and mortality results be lessened. ROBERT H. IVY.

NECK

Smith, O. C.: Differential Diagnosis and Indications for Treatment of Tumors of the Neck.

Boston M. & S. J., 1915, clxxii, 208.

By Surg., Gynec. & Obst.

Because, as the author states, no region of the human body is more subject to inflammatory involvements and growths than the neck, unless it is the abdomen, the pathology of these lesions has a wide range and their diagnosis is at times impossible without the aid of sections and the microscope. It is self apparent that correct diagnosis is extremely important, and therefore the author has given a rather exhaustive and comprehensive view of the more common lesions that affect this partic-

ular location of the body. In his discussion he uses the word "tumor" in its broad sense as including all swellings, acute and chronic, as well as true neoplasms. He classifies the lesions in this area as follows:

TUMORS OF THE NECK

1. Inflammatory.

a. Acute:

- (1) Parotitis (mumps).
- (2) Submaxillary adenitis.
- (3) Cervical lymph adenitis.
- (4) Furunculosis and carbuncle.
- (5) Anthrax (malignant pustule).
- (6) Actinomycosis.
- (7) Echinococcus cyst.

b. Chronic:

- (8) Chronic lymph adenitis.
- (9) Tuberculosis.
- (10) Syphilis.
- (11) Hodgkin's disease.
- (12) Mikulicz's disease.

2. Embryologic malformations.

- (13) Branchial cysts.
- (14) Tumor of thyroglossal duct.

3. Neoplastic.

a. Benign:

- (15) Lipoma.
- (16) Fibroma.
- (17) Chondroma.
- (18) Osteoma.
- (19) Sebaceous cyst (wen).
- (20) Angioma.
 - a. Hemangioma.
 - b. Lymphangioma or hydrocele.
- (21) Hygroma.
- (22) Teratoma.
 - a. Dermoid cysts.
 - b. Mixed tumors of salivary glands.

b. Malignant:

- (23) Carcinoma and epithelioma.
- (24) Sarcoma.
- (25) Lymphosarcoma.

4. Tumors of special organs.

a. Thyroid.

- (26) Physiologic hypertrophy of menstruation and pregnancy.
- (27) Colloid adenoma (goiter) with or without cysts.
- (28) Parenchymatous hyperplasia.
- (29) Fœtal adenoma.
- (30) Malignant disease.
 - (a) Carcinoma.
 - (b) Sarcoma.

b. (31) Carotid body.

c. (32) Aneurism of aorta and carotids.

d. (33) Tumors of larynx. GEORGE E. BEILBY.

FitzSimmons, H. J.: Torticollis. *J. Am. M. Ass.*, 1915, lxiv, 645. By Surg., Gynec. & Obst.

This paper is a study of the records of one hundred cases in the Children's Hospital, Boston.

Frequency of occurrence was found to be practically the same in both sexes and no predilection for either right or left side was noticed. Theories regarding the etiology of congenital torticollis are discussed, including that of rupture hæmatoma and myositis advocated by Stromeyer, the idea of constrained intra-uterine position, and Volcker's ischæmic theory. The ischæmic theory is given most credence.

Hæmatoma and myositis implies a birth injury with rupture of the sternocleidomastoid muscle causing a subsequent contraction from the cicatrix. This idea, however, is not deemed tenable because rupture of muscle in other parts of the body is not followed by myositis and contracture; furthermore, hæmatoma of the sternomastoid is not as a rule followed by torticollis, nor do most of the cases seen after birth show any hæmatoma or injury. An interstitial myositis from ischæmia seems probable, however, especially if one keeps in mind the fact that the middle and sternal portions of the muscle are supplied by the sternomastoid branch of the superior thyroid artery, and that circulation in this branch is easily obstructed by certain positions of the head.

In diagnosis it is difficult to separate the acquired from the congenital form, as the congenital type is not manifest until the child begins to hold his head up. Of the operative methods of treatment the one most popular is that of tenotomy by open incision at the sternoclavicular end of the muscle. Other points of incision are at the insertion into the mastoid and over the middle of the muscle. Results of operative treatment seem to be very satisfactory. Of the cases analyzed, practically all that could be followed up were cured. W. A. CLARK.

Chadwick, H. D.: The Treatment of Tuberculous Cervical Adenitis. *Boston M. & S. J.*, 1915, clxxii, 5. By Surg., Gynec. & Obst.

Many of the children admitted at the Westfield State Sanatorium have tuberculous cervical glands. Not many are noticeably large, but they can be readily felt on examination. Almost invariably these children have enlarged bronchial glands, also, as evidenced by impaired resonance between the scapulæ. As a routine part of their treatment these patients are put on bacillen emulsion if they do not have more than a degree of temperature or other signs of active pulmonary disease.

The initial dose is one-millionth of a milligram, and the course of treatment extends over a period of about six months until a dose of ten milligrams is reached. This maximum could be reached in a shorter time, but a small dose given over a longer period is more effective and can be given in this way without causing reactions.

The results of treatment in these children is very satisfactory. The cervical glands decrease perceptibly in size and the area of dullness over the hilus becomes smaller and less pronounced. The longer the tuberculous disease has existed in a gland the slower will be the effect of treatment.

Resolution must necessarily be limited if fibroid changes have taken place. Suppuration has not occurred in any case where it did not exist prior to treatment.

EDWARD L. CORNELL.

Bainbridge, W. S.: The Question of Anæsthesia in Goiter Operations. *Med. Press & Circ.*, 1915, xcix, 265.
By Surg., Gynec. & Obst.

Certain surgical problems always to be reckoned with are particularly important in the surgery of the thyroid gland, not only because of the location of the operative field, but because of the physical aspects which may be involved. These problems are influenced more or less directly by the anæsthetic, and it is therefore of the utmost importance that they be given due consideration. Chief among them are the following: the maintenance of normal blood-pressure; the determination of the amount of dyspnoea; the avoidance of injury to the recurrent laryngeal nerve or other nerves in the vicinity; the control of hæmorrhage; the lessening of post-operative shock; the lessening of psychic shock.

The advantages of local anæsthesia, as deduced from the author's experience, are:

1. The hæmorrhage is considerably diminished.
2. A free survey of the field of operation is provided and movements of the throat at critical steps may be prevented by instructing the patient to hold his breath.

3. The inferior laryngeal nerve is absolutely protected by the possibility of phonation in the conscious patient. This is doubly important in view of the fact that clamping or ligatures in the immediate vicinity of the nerve may mean a persistent hacking cough as a sequel to the operation.

4. Requiring a better control of the technique on the part of the operator, it safe-guards the patient against all unnecessary injury of the tissues.

5. The strain on the kidneys is lessened, as they are not called upon to eliminate the general anæsthetic, and may be flushed through the stomach by the administration of abundant fluid when the need is greatest, immediately after the operation.

6. Avoidance of post-operative vomiting and diminution of the risk of secondary hæmorrhage.

7. Less elaborate technique is needed, as local anæsthesia does not involve the same refinement of detail as general narcosis.

8. The risk of operative shock is partly eliminated, as patients are apt to consider the operation less serious under local than under general anæsthesia. The importance of this is illustrated by the occurrence of death in patients while being prepared for general anæsthesia, the fear of the operation being intensified by the thought of "going to sleep."

9. Elimination of the dangers of all general anæsthetics.

EDWARD L. CORNELL.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Rodman, W. L.: Cancer of the Breast. *J. Am. M. Ass.*, 1915, lxiv, 707. By Surg., Gynec. & Obst.

A general survey of the subject of cancer of the breast is given together with a report of the author's operative experience and statistics.

In 1867, Moore of London first demonstrated that cancer begins always as a strictly local disease, and today clinical, microscopic, experimental, and surgical evidence bears this out.

Early diagnosis and prompt surgical intervention are both necessary. In doubtful cases the only rational procedure is the removal of the entire mass and an immediate pathological report from frozen sections. All pathological conditions of the mammary gland should be considered malignant until proved benign no matter what the age of the patient, as 20 per cent of carcinomata of the breast occur in women under 40. These carcinomata are relatively much more fatal than those occurring in older patients, because owing to the lymphatic vessels being more numerous and patent the process soon becomes a general or disseminated one. The younger the patient, the sooner the involvement.

The greatest diagnostic difficulty is when abnormal involution and carcinoma are to be differentiated. Of 65 cases of abnormal involution

operated upon by the author, 21.5 per cent had undergone undoubted carcinomatous degeneration.

A table is given showing the results of 200 consecutive private cases operated upon by the author. There were 88 cases of malignancy and 73 of abnormal involution in the series.

Free and early excision is the only method to be considered, says the author, and the danger at this time is at the most one-half of one per cent, with nearly all permanent cures.

A five-year period as a standard to measure results is advocated, as about 10 per cent of recurrences take place in from three to five years. Of 50 consecutive private cases 72 per cent were well three or more years after operation. Of these 7 have passed the ten-year period and 24 have gone five years without recurrence.

Paget's disease is considered extremely malignant. The author maintains that the affection of the nipple and areola is usually a secondary or terminal process.

Röntgen rays are recommended as an adjunct to operation in serious cases. They are used before suturing the wound and after healing. As for their use, as well as that of electricity and radium, without operation on an operative neoplasm of the mammary gland, there is no justification whatever in the author's opinion. PHILLIPS M. CHASE.

Boit, H.: The Significance of the Pleural Endothelium and Its Injury (Über die Bedeutung und die Schädigung des Pleuraendothels bei Operationen und beim künstlichen Pneumothorax). *Beitr. z. klin. Chir.*, 1914, xciii, 326. By Surg., Gynec. & Obst.

The author discusses rather extensively the function of the pleural endothelium and concludes that the pleural lining is a resorbing membrane and a protection to the pleural cavity and the lung; it is quite efficient in overcoming infection, destroying bacteria by means of phagocytosis and bactericidal substances. The pleural endothelial cells are highly organized cells and, while protective on the one hand, are also highly vulnerable to injury. They are readily injured and destroyed by operative manipulations or by the action of air and gas unintentionally or intentionally introduced into the pleural cavity. This is shown by the frequent occurrence of pleural exudates following operations in which the pleura has accidentally been opened and also following the formation of artificial pneumothorax in the treatment of pulmonary tuberculosis. This latter follows rather frequently according to some observers. Mayer, for instance, reports 18 cases of pleural exudates in 46 artificial pneumothorax cases. The exudate contained tubercle bacilli 8 times, staphylococci twice, and pneumococci once. The resistance of the endothelium undoubtedly is lowered by the presence of air or gas, permitting an infection, either exogenous or autogenous, to take place.

L. A. JUHNKE.

Whittemore, W.: Acute and Chronic Empyema. *Boston M. & S. J.*, 1915, clxxii, 168.

By Surg., Gynec. & Obst.

Whittemore's paper is a study of 269 cases of acute empyema and 35 cases of chronic empyema

operated upon at the Massachusetts General Hospital from January 1, 1910, to January 1, 1911. In response to letters many of the patients returned and were examined by the author. In other cases it was necessary to send letters to family physicians and, finally, to town clerks.

In this manner 100 of the acute cases were traced; fifty-four additional cases died in the hospital, a mortality of 20 per cent. Sixty-eight are well, have no discharging sinuses, no bad effects from the operation, and are able to attend to their regular duties. Twenty have become chronic — persistent sinus and cavity with much thickened pleura. Twelve have died since leaving the hospital of causes apparently not connected with empyema. Thirty of the fifty-four cases which died following operation were autopsied. Fourteen of these died of septicæmia — mostly streptococcus; a few pneumococcus. Others died of pneumonia, 5; pyæmia, 3; peritonitis, 1; multiple lung abscesses, 2; patent foramen ovale and thrombosis of pulmonary artery 1; no definite cause, 4.

Of the 35 cases of chronic empyema 23 have been traced: 15 are entirely well; 4 are not improved; 2 died following operation — 1 decortication and 1 curetting of pleura; 2 died of unknown causes since leaving the hospital. The results of operations for chronic empyema are tabulated.

Whittemore believes that operation is often too long deferred. He advocates operation when aspiration reveals serum with many leucocytes rather than waiting for it to become purulent. He believes many cases are not drained at the bottom of the cavity. If exploration of the cavity through the incision proves that it is too high, he advocates a second lower incision if the patient's condition permits.

TORR HARMER.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Dowd, C. N.: Preservation of the Iliohypogastric Nerve in Operation for Cure of Inguinal Hernia. *Ann. Surg.*, Phila., 1915, lxi, 204.

By Surg., Gynec. & Obst.

In the Bassini and allied procedures the splitting of the aponeurosis of the external oblique is an essential procedure to ensure high ligation of the sac. The marked improvement in the per cent of recurrences in modern methods is astounding: Wood in 1886 reports 27 per cent relapses, Bull in 1890, 36 per cent, while Bassini reports 2.8 per cent, Judd 2.5 per cent, Coley and Bull 2.8 per cent, and Murray 1.7 per cent.

He claims that the results obtained from splitting the external oblique and thereby gaining access to the subjacent tissues is all important, as well shown from the results of the Roosevelt Hospital, where, since January, 1910, 1,020 hernias were operated on,

with only 12 in which recurrences were found. Although the per cent of recurrences is small, the total number of hernia operations is very high, as shown in the report of the New York Academy of Medicine, where, in a total of 2,697 operations in October, 268 were for hernia, thus indicating that 10 per cent of the operations of the present time are for hernia. The usual form of relapses is the direct hernia, as reported by Judd, Bassini, and Downes, which would appear natural, as the operation for cure usually leaves the region of the internal oblique better protected than Hessalbach's triangle.

With this in mind, he urges that two considerations be especially borne in mind — adequate suture and preservation of nerve supply. Much attention has been given the subject of suture; Coley believes the lowermost suture to be of the utmost importance. When the conjoined tendon and the fibers of the internal oblique and transversalis are found weak and attenuated, as described by Blake, Blood-

good, and Downes, it is advantageous to bring down a part of the rectus muscle, and even to liberate a portion of the internal oblique from the transversalis fascia, so as to make a reinforced suture line possible.

The twelfth dorsal, the iliohypogastric, and the ilioinguinal nerves are the ones encountered, and they contain both sensory and motor fibers to supply the muscles, peritoneum, fascia, and skin.

The iliohypogastric is situated between the other two and communicates with them in several places; when it is large they are small, and vice versa. The iliohypogastric nerve runs directly across the operative field, and too often it is sacrificed. The cutting of this nerve is very important in cases where hernias are liable to recur. It is found running into the aponeurosis of the external oblique about an inch above the external ring, and because of its size can be avoided easily.

Dowd advocates first making the incision in the aponeurosis with a knife cut about 1.5 inches above the external ring and then slipping curved scissors through this opening and pushing the nerve and muscle well back before proceeding with the incision. In the effort to lessen the number of relapses, proper suturing is more important than the preservation of nerve supply, but the nerve surely has a definite influence and should not be sacrificed.

L. B. CRAWFORD.

Cullen, T. S.: Operation for Radical Cure of Umbilical Hernia in a Patient Weighing Four Hundred and Sixty-Four Pounds. *Surg., Gynec. & Obst.*, 1915, xx, 265. By Surg., Gynec. & Obst.

This patient insisted on operation as the hernia made her practically a semi-invalid. The omentum was incarcerated in a large umbilical hernia and the abdomen when the patient was standing extended to the knees. There was accordingly marked traction on the colon and the patient was almost doubled up like a jack-knife. Cullen removed a piece of adipose tissue of the abdominal wall 36 inches from side to side and 19 inches from above downward, together with the hernia. The patient made a perfectly satisfactory recovery.

Peterhanwahr, L.: Inflammatory Tumors of the Omentum (Über entzündliche Geschwülste des Netzes). *Arch. f. klin. Chir.*, 1915, cvi, 355. By Surg., Gynec. & Obst.

Diseases of the omentum are relatively rare, but probably not so much so as would be indicated by the cases published. It is probable that many of them escape detection, as the symptoms are variable and not particularly characteristic. The most positive symptom of tumor of the omentum is the superficial location of the tumor. Palpation shows dullness; the intestines are never over the tumor.

Peterhanwahr has collected 44 cases of inflammatory tumor of the omentum from the literature, 36 of which had been preceded by operation, mostly

operations for hernia. He divides them into post-operative cases and inflammations extending from other organs; these may be subdivided into simple inflammatory hyperplasia and suppurative or abscess forms. The time after the operation varies from five days to three years, the average being three to four weeks. Many authors think these post-operative tumors are due to fragments of silk or even catgut ligatures; others think they are due to infection of the field of operation. This does not seem probable, because in so many of the cases the wound has healed by first intention. Peterhanwahr thinks it more probable that they are due to suture of an omentum that has already undergone pathological change. In old standing cases of hernia the omentum is usually involved. This view is supported by the fact that the tumors usually arise near the site of the old inflammation. Care should be taken to suture only normal omental tissue, careful asepsis being observed.

Post-operative inflammatory tumors of the omentum are rare; Lucas-Championnière only observed 2 in 275 hernia operations; Dubars reports only 1 in 300 cases and Tuffier only 1 in 600. The diagnosis of the post-operative cases is easy from the history, the superficial position of the tumor, and its course. Diagnosis is more difficult in the cases which do not follow operation and which develop more insidiously. Case histories are given of several cases resulting from extension of inflammation of the appendix or gall-bladder.

It is not always necessary to operate for these tumors. Often they can be cured by rest in bed, hot compresses, and inunction of potassium iodide or mercury salve. If there are one or more abscesses in the tumor, indicated by fluctuation and continuous fever, incision is indicated; there is almost always adhesion of the tumor to the abdominal wall, so there is no danger of infecting the peritoneal cavity. In cases such as one of those described, where there are threatening symptoms of intestinal occlusion, operation should be performed at once. In less severe cases as much as possible of the omentum should be preserved, for the sake of maintaining its function as "abdominal policeman." If operation shows such extensive adhesions that complete removal of the tumor is scarcely possible, a number of partial incisions should be made.

A. GOSS.

Cullen, T. S.: Removal of a Large Tuberculous Cyst of the Mesentery of the Jejunum Together with a Corresponding Segment of the Bowel. *Surg., Gynec. & Obst.*, 1915, xx, 266.

By Surg., Gynec. & Obst.

The patient was a frail child five and one-half years old. A few weeks before coming under observation a tumor was noted in the midline in the upper abdomen. It was globular, about 10 cm. in diameter, and was supposed to be an enlarged kidney. There was a leucocytosis of 15,000. At operation the adherent omentum was loosened, the tumor

gradually separated from adhesions to loops of small bowel, and an attempt made to deliver it. Suddenly there was a slight escape of pus. The sac was turned out of the abdomen and evacuated, and was then clamped off and removed. It was found to spring from the mesentery, the blood-vessels supplying the jejunum also supplying it. The blood supply of the jejunum was partly cut off and it was necessary to resect a large area. Both ends of the bowel were closed and a lateral anastomosis done. The cyst of the mesentery was filled with pus, and its walls consisted of typical tuberculous tissue as shown on microscopic examination. The patient made a temporary recovery, but two weeks after operation developed a facial paralysis. She was able to go home, played around with other children, but about two months later developed a headache, became irritable, and finally there was pain all over the head and antipathy to light and later a comatose condition and opisthotonus. She soon died, evidently of tuberculous meningitis.

GASTRO-INTESTINAL TRACT

Smithies, F.: What Facts of Diagnostic or Prognostic Value Can Be Determined from Test-Meal Examination of Patients with Gastric Symptoms? A Clinical Analysis of 7,041 Consecutive Cases Examined by a Uniform Method. *Am. J. M. Sc.*, 1915, cxlix, 183.

By Surg., Gynec. & Obst.

The author bases his report on the clinical, laboratory, and operative observations on 7,041 consecutive cases. These patients invariably complained of dyspepsia or indigestion, and in each case symptoms were elicited which pointed to some gastric distress. Their ages ranged from 15 to 70; there were two males to one female, and, though all occupations were represented, 32 per cent of the patients were from farms or rural communities. The average length of time of the gastric disturbances was 6.4 years, the shortest two weeks, and the longest 40 years.

The emptying power of the stomach was estimated by a physiological meal of mixed food after the patient had been taken off "diet" and the stomach was empty. He believes that the 12-hour interval is of greater diagnostic value than the 4- to 6-hour interval of Riegel. Because of its ease of administration, its lack of disagreeable features, its constancy, and its ease of removal, the Ewald breakfast of second-day bread was used to determine the secretory factor. The meal was removed after a 50-minute interval, except where there were indications of abnormally rapid emptying of the stomach, when it was removed in from 25 to 40 minutes. To determine the size and position, with the patient in the recumbent position the stomach was inflated with an ordinary bulb, expelling one and a half ounces at each compression, and the boundaries were determined by auscultation while this process was in progress. He found the average

size of the stomach was 27 ounces in females and 33 ounces in males where there was no dilatation, but where dilatation existed the average was 41 ounces in females and 52 ounces in males. It is noteworthy that the greatest capacity was associated with non-malignant pyloric stenosis.

Color. In 6.4 per cent of all cases traumatic blood was noted. Its presence was as constant in simple cardiospasm as in ulceration with or without spasm. He claims that its appearance upon lavage had no consistent relation to any form of gastric disturbance other than cancer. Forty-eight hours after hæmorrhage, lavage in gastric ulcers in 44 cases revealed no gross or microscopic bleeding. In more than half of 218 consecutive cases of cancer traumatic blood was observed.

Bile coloring. In 11 per cent of the cases various shades of green or yellow were obtained. The yellowish shade was a result of the straining as a consequence of tubing, and it occurred in 74 per cent of the patients who had had a previous gastro-enterostomy.

In gastric atony, ptosis with relaxed pylorus, dilatation with or without ptosis, intermittent pyloric spasm, induration about the pylorus due to ulcer or cancer, or obstruction below the papilla of Vater, green coloration from bile was noted. In but 19 per cent of the cases were the coffee-colored or dark-brown extracts found in cancer, but they are quite as apt to be found in partial stenosis with dilatation or atony from non-malignant causes. There were 314 cases of achylia gastrica, and in 96 per cent of this group the extract was a dead-white color, with absent chymification.

Odor. The modifications in acidity influence the odor; the normal peculiar, bland, and somewhat sweetish odor gives way to the odor of the fermentation of putrefactive changes in the retention cases. In 84 per cent of the cancer group the acid, rancid odor due to volatile organic acids was almost pathognomonic, and on the other hand in 76 per cent of the non-malignant retention group the yeasty aroma was almost similarly characteristic.

Amount of gastric extract. The average quantity of test-meal of the entire series was 108 ccm., of the non-retention group 76 ccm., and of the retention class 350 ccm. In young adults of both sexes pyloric spasm, with diseased appendix and gall-bladder, was most often associated with hypersecretion; especially was this so if the symptoms had persisted longer than an average of 2.8 years.

Mucus. This was of not much diagnostic importance, and was only noticed when the pyloric channel was obstructed.

Chymification. This is an indication of masticatory thoroughness, of the kind of food ingested, of the combining power of the hydrochloric acid, the presence of normal gastric ferments, and especially on the variations in gastric peristalsis and emptying power.

The incidence of retarded gastric emptying power. Twelve per cent of the entire series showed some grade

of retarded gastric emptying power, and Smithies lays stress upon the fact that persistent demonstration of gastric retention is cause for surgical intervention. He has found that some of the most marked cases of gastric dilatation have almost perfect emptying power. The causes of persistent gastric retention were in the order named: gastric cancer; duodenal ulcer; gastric ulcer; cholecystitis with adhesions; gastric atony; tumors of the pancreas, liver, and kidney; tubercular peritonitis and retroperitoneal sarcoma. Pyloric spasm, associated with appendicitis, gall-stones, duodenitis, and gastritis, together with increased hydrochloric acid, and gastroparesis caused intermittent retention. The emptying power was retarded in gastric cancer in 70 per cent of the instances; in surgical duodenal ulcers, two out of every three revealed gastric stagnation, while in surgical gastric ulcer some grade of retention was proven in 50 per cent of the cases. When the appendix or the gall-bladder had been operated on in 482 cases of pyloric spasm with intermittent gastric retention, in but 21 instances was any form of gastric stagnation subsequently demonstrated.

Gastric acidity. He strongly condemns the belittling of the significance of the estimation of gastric acidity. The estimates were made by the Toepfer method, and he clearly classifies them into three groups: (1) that comprising recognized disease of the stomach itself; (2) that including lesions of the duodenum, gall-bladder, appendix, and the large bowel; (3) that comprising so-called functional or central disturbances. He found that in acute and subacute perforating ulcer of the stomach the gastric acidity was the highest; that only 54 per cent of gastric cancers revealed absent free hydrochloric acid; that, unless the clinical histories are strongly adhered to, in 45 per cent of the instances of gastric cancer the acidity returns may be confused with simple ulcer, gastritis, or achylia gastrica; that in gastric ulcer with retention there is an increase of both free hydrochloric acid and total acidity, which is not the case in gastric cancer. He strongly suspects malignancy when there is diminution of free hydrochloric acid, an increase in the total acidity, and obstruction, and presence of organic acid.

The highest free hydrochloric acid in Group 2 was present in cases of pyloric spasm associated with subacute cholecystitis, appendicitis, and duodenitis. It is curious to note that in gastroenterostomy for non-malignant stenosis there was a lowering of free hydrochloric acid and also of the total acidity.

Occult blood in gastric extracts. Apart from its significance in malignant processes, its demonstration in gastric extracts has very little clinical worth. It was present in 42 per cent of all the retention cases irrespective of causative lesions; so also was it demonstrated in 75 per cent of the 712 cases of gastric cancer, and quite as frequently in gastric and duodenal ulcers.

Significance of organic acids in gastric extracts. In all non-retention cases it was practically absent; in malignant disease, associated with partial stenosis and dilatation, lactic acid was present in 53 per cent of the 712 operatively demonstrated instances. In but 7 per cent of the non-malignant cases was lactic acid present, and when free hydrochloric was as high as 10 it was rarely present.

Specific ferments in gastric contents. It would appear that in certain instances the estimation of the eruptive power of the gastric juice toward peptone solutions is of considerable value when interpreted in the light of clinical history and symptomatology. In the differentiation between malignant and non-malignant achylia the Wolff test for soluble albumin when interpreted in connection with other clinical and laboratory data proved of considerable value.

Microscopic examination of gastric contents. In all, 6,283 microscopic examinations were made. Starch digestion is not a constant index of the acidity of the stomach juice. Microscopic remnants of the motor meal have no diagnostic significance, unless associated with food macroscopically.

Microorganisms in gastric extracts. 1. In 89 per cent of the cases of benign gastric retention there was present large actively budding yeasts, with large and small sarcinae, and colon-like bacilli, together with particles of food. In these cases the gastric acidity was above 50.

2. In 93.8 per cent of all the author's proved, late, malignant cases of gastric cancer, organisms of the Boas-Oppler group, associated with food retention and acid averaging below 10, was a characteristic picture. He was only able to demonstrate so-called "cancer-cells" in less than one per cent of the cancer cases.

3. In achylia gastrica he found long rosary-like chains, deep-stained cocci, and peculiar, short, fat acid-fast rod or cocco-bacillus that grow in chains or pairs, when there was atrophy of the mucosa and where the motility was not interfered with.

4. When perforation into adjacent viscus has taken place in malignant ulcer or primary cancer, or where the obstruction has occurred below the duodenum, immense numbers of thick cocco-bacilli, associated with or without spirillae or streptococci, together with low acidity, retarded food progress, and putrefaction are shown in more than 94 per cent of cases.

L. B. CRAWFORD.

Einhorn, M.: The Diagnosis and Treatment of Gastric and Duodenal Ulcers. *Canad. M. Ass. J.*, 1915, v, 93. By Surg., Gynec. & Obst.

The author believes that Moynihan's symptom-complex alone cannot be taken for a positive proof of a duodenal ulcer. This symptom-complex may be present and there may be either a gastric ulcer or perhaps none at all. The fact that such a symptom-complex can be caused by gastric ulcer has been demonstrated by patients who have been operated upon. In these the symptoms sometimes were

found to be due not to duodenal ulcers, but to ulcers in the stomach situated near the pylorus or along the lesser curvature, even near the cardia. Whether such a symptom-complex exists without ulceration he cannot say.

The author cannot give the proof, but from what he knows he is sure that in a great number of cases that have this symptom-complex there are no ulcers. The claim that pains do not appear immediately after eating, as was formerly supposed, but always two or three hours later, has been exaggerated. The old teaching that ulcer of the stomach is indicated by pain very soon after eating is correct. If there is an ulcer somewhere in the stomach and it is not in the quiescent state, but is active, we have pain soon after eating, not late after, and we have pain on pressure. The pressure may not be great, yet there is pain. But if we have to deal with a latent, quiescent, not active, ulcer, at that time there may be no pain. We have a patient, for instance, who has too much acidity, pains two or three hours after meals. The pains are there, whether the ulceration is present or not. In cases where the great acidity gives rise to an ulcer, the other condition, hyperchlorhydria, exists, but the symptoms are not due entirely to the ulceration, but to primary troubles. The ulcer exaggerates the symptoms. If there is great acidity, it makes itself felt sooner. That is the author's explanation.

The thread-test is the best means of recognizing the presence of an ulcer and of ascertaining whether it is in the stomach or in the duodenum.

Not all ulcers can be demonstrated with the thread-test, however; for instance, an ulcer on the anterior wall of the stomach will not come in contact with the thread and there will be no stain on it. Ulcers situated in the cardia, the lesser curvature, pylorus, and especially in the duodenum, can easily be recognized by the thread-test. It would be a great exception if there were a duodenal ulcer present and it gave no blood stain on the thread.

The treatment is outlined for mild, medium, and severe cases. It consists essentially of bismuth, liquid diet, and rectal feeding.

While the treatment in peptic ulcers generally is a strictly medical one, their sequelæ may require surgical intervention, the indications for which may be put as follows:

1. Perforation requires immediate operation.
2. Recurrent profuse hæmorrhages (hæmatemesis or melæna, or both), endangering the life of the patient, require a prophylactic interval-operation.
3. Frequent small hæmorrhages, not influenced by rational treatment, leading to an appreciable degree of constant anæmia, demand operative intervention.
4. Cases with constant continuous hypersecretion, accompanied by intercurrent ischochymia, not yielding to treatment, should likewise be operated upon.
5. Severe pains not influenced to a considerable extent by a repeated course of rational medical

treatment form a strong indication for operative measures.

6. Stricture of the pylorus leading to ischochymia is greatly benefited by surgical intervention — gastro-enterostomy. Beginning benign stenosis of the pylorus can, however, also be treated tentatively by stretching.

7. Ulcer accompanied by tumor-formation and suspected malignancy should likewise be operated upon.

EDWARD L. CORNELL.

Brun, H.: Problems in Stomach Surgery, Especially the Effect of Gastro-Enterostomy (Magenchirurgische Probleme, insbesondere über die Wirkung der Gastroenterostomie). *Deutsche Ztschr. f. Chir.*, 1915, cxxxii, 511.

By Surg., Gynec. & Obst.

Brun discusses the question of whether gastro-enterostomy is effective when the pylorus is left open. Röntgen examination has often shown that even when there was a gastro-enterostomy opening the food passed over it through the pylorus. He concludes that this depends on the position of the gastro-enterostomy opening in the stomach. The fundus has very little motile power, and if a gastro-enterostomy opening is made here the food simply passes over it to go to the pylorus, but if the opening is made in the more actively motile antrum the food is forced through the opening.

The subjective symptoms of ulcer of the stomach are hyperscretion, delay in emptying the stomach, and pylorospasm. The chief subjective symptom is pain. This, however, is not always present in ulcer and it is present in some other diseases of the stomach. Brun concludes that pylorospasm is the primary symptom and that the others are produced by it.

The effect of gastro-enterostomy is not directly on the ulcer but on the pain, and it has this effect because it overcomes the spasm of the pylorus. He suggests, therefore, that it would be possible to cure the condition simply by incising the pyloric ring; also, that the effect of gastro-enterostomy could be made more permanent by also excising the pylorus to prevent any future spastic condition of the pylorus accompanied by recurrence. He suggests the possibility, too, of influencing this spasm by a section of the vagus. That this is possible is indicated by a case recently observed, in which, after transverse resection of the stomach for ulcer of the lesser curvature, a spastic condition of the antrum disappeared.

In operating for a carcinoma of the cardia the incision must be carried into the normal tissue. This, as a rule, necessitates incising the thoracic part of the œsophagus, and in mild cases the operation may be performed through the thorax and the stomach reached by incision through the diaphragm. In severe cases it is preferable to perform the laparotomy first and to open the thorax at a second operation.

The next question that arises is how to dispose of

the two free ends. The stomach can be brought up and attached directly to the œsophagus, but there is danger of necrosis of the anterior part of the stomach. The opening in the stomach can simply be sutured and a fistula established through which the patient may be fed, but if the stump of the œsophagus is sutured the tissue becomes necrotic. Various plans have been devised for uniting the ends of the œsophagus and stomach by plastic operation, utilizing either a loop of the small intestine or a tube formed from the greater curvature of the stomach. Thus far there have been nutritive disturbances in the organs used for the plastic operation. Further improvement in the technique is necessary.

In inoperable cases of carcinoma of the cardia or œsophagus, Brun suggests establishing an anastomosis between the œsophagus and the stomach over the carcinomatous contraction by means of a loop of the small intestine; i.e., performing a palliative œsophagogastronomy. Though this would not save the patient it would render his condition much more endurable, and, because of the improved condition, some cases might later prove to be operable.

A. Goss.

Mayo, C. H.: Causes of Failure in Gastro-Enterostomies. *St. Paul M. J.*, 1915, xvii, 90.

By Surg., Gynec. & Obst.

The surgical technique in gastro-enterostomy has been carefully worked out, and from a mechanical standpoint is now quite perfect. Moreover, the details of the various procedures are readily mastered and the operation may be made with a low mortality. However, the percentage of failures, some of which are avoidable, is too high. One case becoming an operative failure creates more confusion and condemnation of the procedure than many successful cases can overcome. It is the group of cases that must be called failures which deters the internists and general practitioners from advising surgical treatment in many cases until the operation is one of necessity with the attendant additional risk from the more advanced condition of the disease.

It has been shown that the further the opening is made into the greater curvature of the stomach the less effectual is the drainage, since the gastric contents pass over the opening into the pyloric end of the stomach and are forced on by active peristalsis toward the duodenum. A gastro-enterostomy, thus located, requires efforts at pyloric closure to improve delivery. But if the opening is made toward the pylorus, the peristaltic contractions may start the contents toward the duodenum and into the intestine through the new opening. Other things being equal, such a gastro-enterostomy will deliver the gastric contents even if the pylorus is open.

One of the great immediate bugbears of posterior gastro-enterostomy has been the vicious circle. In the earlier work of the Mayo Clinic by turning the bowel to the right at the point of attachment there was an average of one case of vicious circle in about

fourteen operations. In order successfully to turn the bowel to the right it was necessary to leave a longer loop and often to make a primary or even a secondary entero-enterostomy of the loop. This twist of the bowel was a relic of the old anterior operation and to obviate it the Y-method of Roux was developed and a fairly long loop was used. This method is in common use and is employed by many surgeons to overcome the difficulties resulting from twisting the bowel out of its normal position.

Jejunal ulcers following gastro-enterostomy have been rather frequently reported. I have not observed any such except in connection with gastro-enterostomy itself, just below the opening. In all of these cases that were explored, the buried or partially buried remains of the non-absorbable suture material used in making the anastomosis was found. The true importance of this was not appreciated until it was seen in a series of cases. The symptoms in these cases very much resembled the original symptoms of ulcer which the patient complained of before operation. The X-ray might show that the gastric contents passed by either or both routes, the pylorus or the new opening. At the second operation the gastro-enterostomy incision seemed to be indurated and much thickened throughout a part of its circle, yet the stomach could be invaginated through the opening. In these cases cure may be obtained by opening the loop of bowel at the site of the gastro-enterostomy, making a Finney type of plastic operation as recommended for pyloroplasty and removal of the thread. Eventually a spontaneous cure may follow the disappearance of the suture in some cases.

Jejunal ulcers are usually mechanically produced from the retention of permanent suture material in making the anastomosis. Patients who have been primarily relieved by gastro-enterostomy and have developed the same symptoms later should be re-operated on and this condition among other causes of relapse be looked for.

The gradual closure of the gastro-enterostomy, although a rare occurrence, is an additional cause of failure in the operation.

Scudder, C. L.: Congenital Pyloric Tumor. *Boston M. & S. J.*, 1915, clxxii, 166.

By Surg., Gynec. & Obst.

Scudder's paper demonstrates that a baby having a congenital pyloric tumor obstruction will always have a tumor obstruction. He collects a series of 26 cases of this condition treated by gastro-enterostomy and subsequently X-rayed, as follows: Richter of Chicago, 10 cases rayed 7 days to 3.5 years after operation; Downes of New York, 6 cases rayed 4 months to 2 years after operation; Mitchell of Washington, 1 case rayed 2.5 years after operation; and 9 cases rayed by the author 1 to 8 years after operation. The returns are uniform. In each case the bismuth examinations showed the pylorus obstructed, showed the stoma patent, and showed the stoma the only exit from the stomach.

Three cases of this condition treated by posterior gastro-enterostomy which came to autopsy from other causes are in accord with the X-ray evidence. These are the cases of Morse, F. T. Murphy, and Wolbach autopsied 7 months after operation; of Grulee and Lewis autopsied 9 months after operation; and of Downes autopsied 3.5 months after operation. Each showed obstructing pyloric tumor both at operation and at autopsy.

Scudder recognizes that obstruction in general at the pylorus may be either mechanical or physiological; i.e., spasm; but in cases with tumor, he believes that the tumor alone with the mucous membrane changes is adequate cause for obstruction in all its phases and that it is unnecessary to imagine a pyloric spasm associated with the obstructing tumor. He deplores the idea, now so prevalent, that the hypothetical spasm will stop and the tumor disappear. Too prolonged experimental feeding is practiced and adequate surgical relief is too long deferred.

TORR HARMER.

Barclay, A. E.: The Positive Diagnosis of Duodenal Ulcer. *Arch. Röntg. Ray*, 1915, xix, 280.

By Surg., Gynec. & Obst.

The author takes exception to the statements of certain American röntgenologists that "mere erosions of the mucous membrane are of no surgical consequence." The bleeding from a small superficial ulcer may be as serious and the chances for perforation greater than from a large cicatrized one.

The danger does not lie in the deformity but in the erosive qualities. The deformity is the evidence of the effects of ulceration and may have no pathological significance. The author believes the clinical symptoms of duodenal ulcer are due to duodenal irritation which always precedes and may or may not have gone on to ulceration. If not, of course no deformity of the duodenal shadow will be found.

The surgeon is not required to operate on those cases where nature has healed the lesions by cicatrization, but on those in which duodenal irritation is still present. The author believes also that this duodenal irritation is in itself a secondary manifestation, and that the ideal treatment for it is not gastro-jejunostomy, but the detection and removal of the causes of this irritation.

G. W. GRIER.

Friedman, G. A.: The Experimental Production of Lesions, Erosions, and Acute Ulcers in the Duodenal Mucosa of Dogs by Repeated Injections of Ephinephrin. *J. M. Research*, 1915, xxxii, 95.

By Surg., Gynec. & Obst.

The author has previously pointed out the value of polycythæmia or polyglobulia for the diagnosis of non-bleeding duodenal ulcers in man. Briefly recapitulated, his work seems to demonstrate that while in duodenal ulcer the condition of polyglobulia is frequent and of anæmia rare, just the reverse occurs in gastric ulcer; thus, of 18 operatively demonstrated cases of duodenal ulcer, polycythæmia was found in 15, while in 12 cases of gastric

ulcer polycythæmia was noted only once. Seeing, therefore, a possible connecting link between the polyglobulias found in duodenal ulcer and the experimental polyglobulias found after injections of adrenalin on the one hand and in the tendency of adrenalin to affect tissues with sympathetic innervation on the other, Friedman set up the working hypothesis that the initial lesion of duodenal ulcer may be caused by an excessive secretion of the adrenals. With this object in view he undertook the following experiments, which consisted of repeated injections of adrenalin in dogs. The dogs were injected between 2 and 3 o'clock p.m. almost daily, with occasional intervals, no food being given in the morning on the days when the injections were given. The injections were kept up for one to two weeks, being made either into the vein or into the muscle. The usual adrenalin hydrochloride solution (1:1000) of Parke, Davis & Co. was used. The single dose was not less than 1 ccm. of the solution, or 1 mg. of adrenalin, and did not exceed 3 ccm., or 3 mg. by either of the methods. The autopsy showed lesions, erosions, and ulcerations in the duodenum of 11 dogs out of 12 experimented upon. This the author believes is certainly more than coincident.

Friedman was led to publish this preliminary study, inasmuch as a careful search in the literature had not revealed to him any mention of the selective action of adrenalin upon the duodenal mucosa, and while the material as yet is too small to admit of any definite conclusions he feels that this work may have an important bearing upon the pathogenesis of the duodenal ulcer in man.

GEORGE E. BEILBY.

Andries, R. C.: Post-Operative Ileus, and Ileus Accompanying Peritonitis. *J. Mich. St. M. Soc.*, 1915, xiv, 86.

By Surg., Gynec. & Obst.

In the treatment of post-operative ileus the author recommends enterostomy, which to be successful in these extreme cases must be done without added shock to the patient. This can readily be accomplished at the primary operation in cases of peritonitis accompanied by ileus, and in post-operative ileus under local anæsthesia, either by separating the edges of the old incision or by making another small opening. Any presenting distended loop of ileum (preferably one near the cæcum) can be caught, fastened to the cut edges of the parietal peritoneum by two or three sutures, and opened by a small longitudinal incision. Gas and fæcal-stained fluids will immediately be forced out in large quantities, and the relief to the patient is at once apparent. To insure the patency of the opening in the gut, a rubber drainage tube is inserted toward the proximal end. If in doubt as to which end is proximal, a tube can be inserted in both directions.

Closure of the enterostomy wound is undertaken in two or three weeks, by which time the bowel will have fully recovered its tone. Toward the end of this time enemata are usually effectual, and in

some cases even normal bowel movements occur. If at this time feces cannot be evacuated per rectum, it is advisable to defer closure of the enterostomy wound longer than two or three weeks. It will be remembered that the opening made in the bowel at the time the enterostomy was performed was only a small longitudinal slit; simple approximation of the edges reinforced by a few Lembert sutures is all that is necessary. Occasionally an enterostomy wound will even close without an operation, just as nature's fæcal fistulæ usually close spontaneously. It is rarely necessary to free all adhesions; make a wide resection of the bowel at the point of the opening and perform an end-to-end anastomosis.

The author anticipates post-operative ileus in cases of appendicitis complicated by peritonitis in which the cardinal symptoms of ileus, vomiting, meteorism, and coprostasis are prominent. The appendix, if easily accessible, is removed, and the peritoneum is drained through the appendix incision and through the suprapubic and left iliac wounds. In addition, a distended loop of ileum is stitched to the edges of the peritoneum at the site of the appendix incision, opened, and drained.

The results have been surprising. Patients who were delirious, practically moribund, and in whom recovery seemed hopeless have survived the operation, rallied, and recovered. Five cases are reported.

EDWARD L. CORNELL.

Peterson, E. W.: The Danger of Delay in the Diagnosis and Treatment of Intussusception in Infancy. *Med. Rec.*, 1915, lxxxvii, 218.

By Surg., Gynec. & Obst.

In intussusception the clinical picture is more constant and unvarying and the symptoms are more uniform and characteristic than in any other type of intestinal obstruction. In spite of this no class of cases is more often unrecognized and more habitually mismanaged and maltreated. Because of failure to make a diagnosis or delay in the recognition and treatment the mortality of this disease is disgracefully high. The figures would probably be better if spontaneous disinvagination had never occurred and if no case had ever recovered after sloughing of the intussusception. It is unfortunate, too, that hydrostatic pressure and gas or air inflation succeed in a limited number of cases, for such measures are often persisted in until the time for a successful operation has passed. It is not the purpose of this paper to decry aërohydrostatic treatment but rather to emphasize its limitations.

Thirty-two cases were seen in 10 years, 29 in infants and 3 in older children. Of the 32 cases subjected to operation 16 died and 16 recovered. The author had personal charge of the 19 cases whose histories appear in the article.

The patients ranged in age from 6 days to 13 months. All were breast-fed, healthy, well-nourished infants, with one exception. In the physical examination an abdominal tumor was palpated in every instance. The invagination — unless stated

otherwise — was in the ileocæcal region. Every case seen within 48 hours of the onset of symptoms was saved by laparotomy. In several instances the symptoms had lasted even longer in patients who recovered. The fatal cases were all brought in late and, for the most part, were considered hopeless, but none was refused operation. Eight out of the 19 cases died.

These statistics seem inexcusable, but if a reason is sought the answer is simple; i.e., failure or delay in the diagnosis, improper treatment, or procrastination in advising surgical measures. In many of the cases it was only after failure of medical treatment and mechanical measures to reduce the invagination that the patients, as a last resort, were sent to the hospital for operation. The fault rarely rests with the family in refusing operation, but lies with the physician who fails to realize his responsibility in the care of this peculiarly serious affection.

In a study of this disease the most striking point is the wide difference between the mortality in the early and in the late operations. The statistics of the greatest interest are those giving the time of treatment, either surgical or otherwise, after the onset of symptoms; and almost invariably one is impressed with the fact that "cured" cases were diagnosed and treated early. Cases recognized and operated during the first 24 hours give a mortality in experienced hands of not over 10 per cent. Cases treated after two days have passed, with but few exceptions, have little chance of recovery.

The symptoms, diagnosis, and treatment are taken up in detail.

The typical sausage-shaped tumor of the textbooks has been too much emphasized. It is rarely felt early and, when present, means that the intussusception has progressed to a considerable extent. More often a rounded mass is felt and it may occupy any portion in the abdomen. It is generally quite movable and may resemble an enlarged gland. Where the tumor is oblong or sausage-shaped, it is curved with the convexity directed toward the umbilicus. The mass may be felt to contract or relax under the hand. If the tumor cannot be felt abdominally, then bimanual rectal examination should be made in every suspected case. Under anæsthesia one seldom fails to discover its presence.

EDWARD L. CORNELL.

Davis, L.: Rupture of Intestine. *Boston M. & S. J.*, 1915, clxxii, 163.

By Surg., Gynec. & Obst.

Davis reports two cases of rupture of intestine in which suture was followed by recovery. The first was a boy who had fallen on a rock 19 hours previous to examination. Operation showed the abdominal cavity to be filled with fæcal fluid and a rent in the small intestine extending nearly across the gut. This was closed with chromic catgut and the abdominal cavity thoroughly washed out with salt solution. The abdomen was closed, two drains being left. Stimulated with tap water by

rectum and caffen and camphor, the wound sloughed and healed by granulation. The patient was discharged in excellent condition in six weeks.

The second case was a boy of 8, who had been struck by an automobile about two hours before operation. He showed signs of internal hæmorrhage, and operation disclosed a belly filled with blood. A loop of small bowel, completely severed, was found. The edges were trimmed and approximated with Pagenstecher. The abdominal cavity was thoroughly irrigated with salt solution and the wound closed, a wick drain being left. Subsequent treatment consisted in Fowler's position, rectal seepage, and strychnia. The patient was discharged in excellent condition in three weeks.

In cases of ruptured bowel, by injury, in which there has not been an opportunity to wall off the infectious area, Davis believes that thorough irrigation of the abdominal cavity is a life-saving measure. In his experience both children and adults retain ordinary tap water by rectum as well, if not better, than normal salt solution.

TORR HARMER.

Anderson, J. H.: Successful Treatment of a Bichloride Poisoning Case by Hydraulic Irrigation Through a Cæcostomy Operation. *Surg., Gynec. & Obst.*, 1915, xx, 350. By Surg., Gynec. & Obst.

The author reports a new and successful treatment in one case in which the patient had taken 10 grains of bichloride on an empty stomach. It was two and one-half hours before the stomach was washed out by an interne at the hospital. Sufficient mercury was absorbed to produce total anuria, with the usual abdominal symptoms of intense colic and purging.

The rationality of the treatment is based on the pathological anatomy. No matter how the mercury is absorbed into the circulation, it is resecreted by the mucosa of the alimentary canal, the vagina, and bladder. This mercury does not remain on the surface but is probably reabsorbed if not removed by vomiting or purging. Gastric lavage may remove some mercury. Milk and eggs may precipitate some of it in the stomach and intestines, but owing to the severe cramp and pain in the intestines, tenesmus, and stools, it is impossible to thoroughly remove the contents of the bowels systematically and continuously for a number of days, except by enterostomy or cæcostomy. In addition, this method of washing the bowel forces a large quantity of water into the portal system, increasing blood-pressure, improving the pulse, and diluting the poison in the circulation of the heart and kidneys. The result is that the plugs of tubular debris in the kidney are cleaned out, making secretion of urine possible.

The mercury in the case reported was found solely in the watery stools, and as late as the tenth day. The urine flowed freely only when water was under pressure in the colon. The general effect was

stimulating. The case made a good recovery. The acute inflammation of the kidney subsided in about 14 days. The amount of water used by cæcostomy was from 5 to 10 gallons per day, the quantity being gradually reduced until the fourteenth day.

The question of decapsulation in cases where the kidneys are badly damaged before this treatment is instituted must be left for future tests. The important point is the theory of washing out the resecreted poison from the entire colon.

Parkes, C. H.: Stump Treatment in Appendectomy. *Interst. M. J.*, 1915, xxii, 156.

By Surg., Gynec. & Obst.

Much discussion has been indulged in upon this subject, in which the adoption of a uniform plan seems to be about as possible as the adherence to the use of catgut in the abdomen to the exclusion of silk, or vice versa.

It is an interesting study to observe the different schemes adhered to in the technique of this maneuver. In this regard one is led to wonder what post-operative records show regarding pain, fistulæ, infection of the wall of the cæcum, and obstruction due to adhesions. It would be exceedingly interesting to compile statistics on this question, based upon the many subsequent operations performed for the relief, not of a pathological appendix, but for pathology due to a previous appendectomy. Naturally, this subject alludes only to those operations performed during quiescence, with no active inflammatory process existing. In cases where there is an active inflammatory process, even though slight, subsequent adhesions and other untoward results are not surprising. In interim cases without inflammation the percentage of post-operative adhesions or other unexpected sequelæ ought to be very low.

To insure success with the lowest possible mortality and the least chance of post-operative complications, the following principles should prevail:

1. The prevention of hæmorrhage by (a) the actual cautery when available; (b) the ligation of the vessels; (c) the use of formaldehyde, as is done in many clinics; or (d) by the ligation of the stump. The latter, however, might become the origin of an abscess in the cæcal wall because of septic mucous membrane left in a pocket.

2. The prevention of general peritonitis by invagination, which avoids danger from the access of intestinal contents to the free peritoneal cavity by the slipping of a ligature off the stump.

3. The prevention of adhesions between raw surfaces by turning the stump into the cæcum.

4. The selection of a simple, safe, and rapid method of purse-string operation which does not necessitate the use of a specially devised instrument.

5. The adherence to one simple plan to establish a good habit.

EDWARD L. CORNELL.

Keilty, R. A., and Smith, A. J.: Intestinal Stasis, Bands, Kinks, and Membranes. *N. Y. M. J.*, 1915, ci, 549.
By Surg., Gynec. & Obst.

From their study the authors divide peritoneal folds into three groups: (1) peritoneal anomalies; (2) developed folds (hypertrophies or "crystallization of the lines of strain"); and (3) peritonitis, subdivided into acute fibrinous peritonitis, (a) non-operative, and (b) operative; chronic fibrous peritonitis, (a) the results of acute peritonitis, and (b) a gradual fibrosis.

This division is mainly made upon the gross appearance. Microscopical appearance varies only in minor detail. Peritoneal anomalies appear as normal folds of peritoneum, mesenteries, or omentum. They are usually thin and have a normal blood-vessel distribution. They occupy relatively the same positions in all cases. Developed folds are thickened normal folds and are always peritoneal in nature. The thickening is in the sub-endothelial connective tissue and is made up of an increase in that connective tissue, likened to the hypertrophy of parenchymatous structures. Peritoneal inflammations should be easily recognized, the chronic form occurring as radiating and irregularly thickened lines — ileum to cæcum — as coaptations of parts at abnormal situations and as bands.

Under the heading of peritoneal anomalies are included all alterations or unusual developments of folds of peritoneum which are commonly seen, such as the cæcal folds, Reid's folds, and Jackson's membrane; secondly, any fold of peritoneum which in its general appearance may be likened to these. In reviewing the abdominal cavities, one is struck by the wide variations in these folds. They occur at many different locations and follow many different types. Several new names are suggested in designating these various folds.

The authors state that it is useless to fill the abdominal cavity with materials which are foreign to it in order to suppress adhesions; it must be recognized that to handle the gut excessively will result in abrasions; it must be recognized that to pinch the peritoneum with forceps, especially with rat-tooth forceps, will cause injuries to the peritoneum. In accepting this, the surgeon must bear in mind that it is Nature's law to heal injuries and that the greatest part of repair is by fibrosis. It may be said that the greater the injury to the peritoneum at the time of operation, the greater will be the number of adhesions at a later date, and vice versa.

EDWARD L. CORNELL.

Soper, H. W.: Polyposis of the Colon and Multiple Benign and Malignant Adenoma Limited to the Sigmoid Flexure of the Colon. *Tr. Gastro-Enterol. Ass.*, Baltimore, 1915, May.
By Surg., Gynec. & Obst.

Soper reported a case of polyposis of the colon in a child aged 8 years in which the entire colon was successfully removed — ileosigmoidostomy. Pathological examination showed the growths to be

benign adenoma. There was no evidence of any inflammatory process in the mucous membrane of the colon.

He also reported 20 cases of adenomatous polyp of the sigmoid flexure of the colon. Ten cases were multiple. In three cases malignant degeneration of a polyp had occurred. In one case three inches of the sigmoid was resected. In all the other cases the growths were removed by means of the snare and cautery. Chronic spasticity of the sigmoid is the probable cause of the frequency of the growths in this region. A plea is made for routine sigmoidoscopy in all cases of chronic constipation and in all cases presenting symptoms of blood in the faeces, regardless of the presence of hæmorrhoids. When limited to the rectum and sigmoid the polypi can be removed readily by means of the snare and cautery, provided they are not too numerous. Even when malignancy develops in a pedunculated polyp, it is possible to destroy the growth completely without resorting to resection of the bowel.

Specimens and lantern slides of microscopical sections illustrating the malignant degeneration were presented.

Lynch, J. M., and Draper, J. W.: Developmental Reconstruction of the Colon Based on Surgical Physiology. *Ann. Surg.*, Phila., 1915, lxi, 166.
By Surg., Gynec. & Obst.

The authors plead for a better understanding of the origin, growth, and function of the large gut before surgical procedures are adopted.

The vitelline duct marks the division of the fore- and hind-gut. About the third week of foetal life the future cæcum and appendix appear as a bud on the hind-gut a slight distance aboral to the vitelline duct. Thus the terminal ileum and the colon have a common embryological origin.

At the end of the third month the colon undergoes a twist and comes to lie over the right kidney, where it remains until birth, when, under normal impulses, it migrates to the right iliac fossa. In dogs the second position is the final one, and man would probably have been more efficient had his colon remained in this position also. This is demonstrated by Bloodgood's operation of partial colectomy. Under abnormal impulses the rotation and migration are changed, and malformations result which later on lead to functional derangements, thus explaining those cases of appendicitis which seem hereditary; i.e., hereditary misdirection of cæcal migration and rotation.

The function of the colon is, first and foremost, elimination, while secondary and of very little importance, is absorption.

Elimination, not so much of the faecal matter as of the different toxins and poisons within the body, is the latest and most reasonable theory. Experiments in intestinal obstruction have shown this. And, indeed, an important corollary from this must be that colonic irrigation is a reasonable and feasible therapeutic measure. The authors believe

the effect of colon irrigation is due to the mechanical washing away of the toxins. The stomach and colon are compared in this respect. The diarrhoeas of constipation, syphilis, goiter, and nephritis are considered as demonstrating the eliminative function of the colon. Experiments, however, show that this applies only to the caudad colon; i.e., that part beyond the median line of the transverse colon.

He cites several opinions of noted physiologists on the absorptive and related functions of the colon, which tend to show that the colon is a place of digestion and absorption, particularly of fats. The authors state this is not their experience, and they further believe that the above slight function is overshadowed by the dangers which may arise from a slowly emptying cæcum and ascending colon.

Another function of the cæcum which the authors take exception to is that of absorbing water from its contents. They also believe in the idea that the caudad colon, after ileocolostomy, may assume the functions of the cæcum and ascending colon. The mistake is due, so they state, to the idea that the terminal ileum and cæcum are morphologically different, whereas being embryological units there is a facultative copartnership between them, that, in the absence of one, allows the other to take on its functions. Thus can be explained the persistent diarrhoea and constipation so common after the operation of ileocolostomy.

Conclusions based on X-rays alone are erroneous, because the difference between stases due to mechanical and those due to reflex causes cannot be shown, and, second, because it is not certain whether bismuth travels at the same rate as food.

The authors believe that the good done by rectal feedings is due wholly to the water and not to the food, and that rectal alimentation is one of our inherited misconceptions.

PHILLIPS M. CHASE.

Lobingier, A. S.: Colocolostomy. *Ann. Surg., Phila.*, 1915, lxi, 176. By Surg., Gynec. & Obst.

The author suggests the operation of colocolostomy as a conservative measure to maintain the alimentary purpose of the colon and yet relieve the symptoms of stasis. Last year the author presented a detailed clinical history and report of operation on five patients. This paper includes four more cases.

After operations for visceroptosis, in quite a number of cases the nutritional index remains below par and symptoms of stasis still continue. This condition is due to a very acute angulation of the colon at the splenic flexure, and not infrequently at the hepatic as well, preventing the onward movement of gas and feces. The usual operative procedures do not affect this condition in the least.

The gastropotosis is first corrected when necessary by the technique of Rovsing, and the gastrocolic ligament then plicated. Following this an anastomosis is made, usually at the splenic flexure, between the two limbs of the colon. If the angle of the hepatic flexure is 15° or less a similar anastomosis is done also.

The paper closes with the following summary:

1. The anastomosis should be 5 cm. in length.
2. The usual clamps and sutures of gastroenterostomies are used.
3. The colon should previously be thoroughly cleansed with salt solution.
4. To avoid the possibility of a loop of ileum slipping between the colonic segments above the anastomosis, the serosa of the two segments are sutured together.

PHILLIPS M. CHASE.

Wiener, J.: A New Operation for Stricture of the Rectum or Sigmoid. *Surg., Gynec. & Obst.*, 1915, xx, 222. By Surg., Gynec. & Obst.

Wiener's patient, a man of 63 years, came under his care at Mount Sinai Hospital. Four months before admission he had resorted to a hot enema for constipation, and produced a severe burn of the rectum. A few weeks later he had small frequent bowel movements, probably the result of the formation of an inflammatory stricture; his general condition was not good. Rectal examination revealed a hard circular infiltration five inches from the anus. The stricture would not admit the tip of the index-finger, and the tip of the smallest bougie could not be passed through it. The stricture was too high up to make linear incisions, and any attempt at dilatation would probably have resulted in perforating the bowel. An external proctotomy with resection of the coccyx would have been much too serious an operation for such a feeble old man. Through a left rectus incision the abdomen was opened. An assistant passed a Wales bougie into the rectum and it met an impassable obstruction five inches from the anus. At the site of the stricture a white scar one inch wide was seen, completely surrounding the bowel. The assistant was instructed to make upward pressure on the bougie which Wiener had made to engage in the stricture by manipulation from inside the abdomen. This was at first unsuccessful, but it occurred to the author that by forcing the bowel downward toward the anus from within the abdomen, the stricture might be overcome. After a few minutes of this manipulation the stricture began to dilate and soon the tip of the bougie was felt in the bowel above the stricture. Larger and larger bougies were passed in the same manner and the bowel was milked over them from within the abdomen as with the first until the largest Wales bougie lay in the rectum above the stricture. The bougie was allowed to remain in place and the abdomen was closed without drainage. Eighteen hours after operation the bougie was removed on account of pain. Convalescence was uninterrupted, and the man left the hospital at his own request a week after operation. He was requested to return every few weeks to have bougies passed, but he neglected to do so. Nevertheless, four months after operation, the largest Wales bougie could be readily passed.

This operation is applicable to strictures more than three or four inches from the anus. Its ad-

vantages are: (1) ease and certainty, the work being done under guidance of the eye; (2) absence of shock; (3) rapid recovery; (4) little or no danger of perforating the rectum.

LIVER, PANCREAS, AND SPLEEN

Frank, L.: Gall-Bladder Infections; Their Treatment from a Surgical Standpoint. *Surg., Gynec. & Obst.*, 1915, xx, 360.

By Surg., Gynec. & Obst.

The author thinks the final verdict is yet to be rendered as to the disposition of the gall-bladder in cases which come for operation.

Attention is called to the work of Lane, and although by no means prepared to accept his premises in their entirety nor agree with his conclusions *in toto*, it is believed he has opened a wide field for profound and deep study and experimentation in its relationship to the subject under discussion.

There are two types of cases to which especial attention is directed: the first, cholecystitis without stone formation; the second, chronic obstruction of the common duct from calculi.

The author's observation has been that cases without stones are among the most difficult to relieve permanently, and he is of the opinion that until within the last year or two the treatment consisting of drainage alone has probably been at fault. However, since subjecting these patients to cholecystectomy a greater measure of success has been obtained.

He thinks the term chronic cholecystitis has been and will continue to be used as an explanation to cover errors in diagnosis. A successful culture of bacteria from bile in the so-called chronic cases is not sufficient to verify the diagnosis, as observation has shown in chronic cholecystitis definite changes in the gall-bladder walls: whereas, the bile itself may or may not contain micro-organisms. Often if the gall-bladder is subjected to drainage, pure and simple, an ultimate cure does not result. In this type, cholecystectomy is necessary to secure permanent and complete relief. If prolonged drainage of the choledochus tract is necessary, after removal of the gall-bladder, a tube is sutured into the cystic or common duct.

In cases of acute cholecystitis with pus, the gall-bladder being isolated from the general peritoneal cavity by omental adhesions, he does not advise or practice removal of the gall-bladder. Complete separation of the adhesions is undesirable, and the best results are obtained by carefully separating the omental wall from only such an area as will permit access to the gall-bladder for the purpose of drainage, which is rapidly carried out, disregarding stones. The aim should be to interfere with Nature's barrier as little as possible. The primary object is to afford drainage, and at the same time prevent further spread of infection. Calculi, if present, can be removed at a second operation. He is convinced that in these cases cholecystectomy is bad practice.

The exact status of cholecystectomy has yet to be determined. Conclusions based upon the work of the men in the large clinics will finally become the accepted practice among surgeons generally. With Frank it has seemed that it is not so much a question of which gall-bladder to remove, as which not to remove. The negative side of the question requires the exercise of greater judgment. Cholecystectomy is indicated in all cases where calculi have for some time been present in the cystic duct.

The other type of cases to which attention is called is that in which calculi are present in the common duct, producing more or less continuous complete obstruction. If the obstruction is acute, there is practically but one opinion as to the procedure; if the obstruction is chronic, the procedure to be followed is open to discussion.

Attention is called to the high death-rate in these cases. The mortality has been markedly lowered through anoci-association and the administration of nitrous oxide gas. With the liver damaged, the administration of a lipoid-solvent anæsthetic is contra-indicated.

Frank offers as a further explanation of the fatality, aside from that due to sepsis, the sudden release of intrahepatic pressure, and says the condition is quite analogous to that of the kidneys in old prostatic obstruction. The sudden alteration in pressure permits such a tremendous influx of blood that the metabolic function of liver-cells is impossible, and as a result death ensues.

In his operative work in recent years, since becoming familiar with the anoci-association method under gas-oxygen anæsthesia, and complete blocking, he has been content with preliminary drainage of the gall-bladder. After the gall-bladder has been permitted to drain for some time, and the patient's temperature has been reduced to normal, and the jaundice has subsided, he does a secondary operation, removing the obstruction from the duct. Under this plan the mortality is very materially reduced.

Cullen, T. S.: A Calcified Lymph-Gland Producing Symptoms Somewhat Suggestive of Gall-Stones. *Surg., Gynec. & Obst.*, 1915, xx, 260.

By Surg., Gynec. & Obst.

In this case, while making a right rectus incision for the removal of a chronic appendix, Cullen put his hand up into the gall-bladder region to see if by any chance the gall-bladder contained stones, as the patient gave a history of jaundice on one occasion. He felt what appeared to be a gall-stone and lengthened the incision upward. Situated at the junction of the cystic and common duct was a calcified nodule about 1.5 cm. in diameter. This was gradually shelled out of the adhesions and removed without either the cystic duct or the common duct being opened. On chemical examination it was found to bear no resemblance whatever to a gall-stone. With hydrochloric acid and nitric acid it gave off carbonic acid. It was undoubtedly a calcified lymph-gland.

Peterson, R.: Gall-Stones During the Course of 1,066 Abdominal Sections for Pelvic Diseases.

Surg., Gynec. & Obst., 1915, xx, 284.

By Surg., Gynec. & Obst.

It is generally agreed that the appendix should be inspected and removed when necessary when the abdomen is opened for pelvic disease. This does not hold true if the pelvic disease be of such a nature that further abdominal manipulation will likely contaminate the clean peritoneum or if the condition of the patient forbids further manipulation.

The same kind of reasoning applies to the gall-bladder when the abdomen is opened for pelvic disease. The patient has the right to demand that all her abdominal derangements be cared for at one and the same operation in so far as this can be done with comparative safety. Since it is shown that in quite a percentage of cases of pelvic disease gall-stones are present and give rise to symptoms prior to or subsequent to the pelvic operation, unless contra-indications exist similar to those cited in the case of the appendix, the gall-bladder should be palpated and gall-stones removed when the abdomen is opened for other purposes.

The day of the small abdominal incision is past. The incision should be large enough to allow of thorough abdominal exploration. Otherwise important lesions in other portions of the abdomen will be undiscovered and the patient left in an unsatisfactory condition because, while cured of one lesion, she will suffer from another.

Operations on the gall-bladder are contra-indicated in the presence of malignant disease of the uterus or the appendages, unless an operation upon the gall-bladder or biliary passages be imperatively demanded for the relief of pain.

A careful history will sometimes fail to reveal symptoms pointing to gall-stones; yet when calculi are found during a pelvic operation, vague symptoms ascribed to "gastralgia" or "indigestion" are explained. To leave gall-stones under such conditions will result in only a half-cure, no matter how skillfully the pelvic lesions have been cared for. Furthermore, in order to secure the best operative results gall-stones should be removed as early as possible, before complications have set in.

The author's report is based upon observations made upon coincident gall-stones in 1,066 pelvic operations performed by the abdominal route. In every instance the pelvic symptoms predominated, the strictly gall-bladder cases being eliminated. In every instance then the question had to be decided at the time of the pelvic operation, when the gall-stones were found, whether it was advisable to extend the operation so as to care for the existing gall-stones. This naturally raised the question as to whether uncomplicated gall-stones really called for operation—a question that can be answered only by obtaining the subsequent histories of patients in whom the calculi were left at the time of the pelvic operations. This has been done in quite a large proportion of the cases and the results analyzed.

Among the 1,066 patients, gall-stones were found 135 times, or in 12.66 per cent of the cases. Kelly estimates that gall-stones were present in 8 per cent of his gynecologic patients. In 1,244 patients operated upon at the Mayo Clinic for uterine myoma, 7.1 per cent had gall-stones.

Gall-stones are more common in women than in men. The high percentage of gall-stones in the present series, 12.66 per cent, is probably due to one or more of three causes: the relatively advanced age of the patients examined, since it is fairly well established that the older the person the greater the liability to gall-stones; the high percentage of women in the series who had borne children; or finally to the large proportion of uterine and ovarian neoplasms present in the women examined for gall-stones.

The percentage of gall-stones increased with each decade from the age of 20, varying from 6.8 per cent in 276 patients examined between the ages of 20 and 30 to 29.1 per cent in 24 women between the ages of 61 and 70.

Pregnancy and the puerperium favor the formation of gall-stones. Among the causes may be mentioned the encroachment of the enlarging pregnant uterus upon the liver and its biliary passages, thereby favoring the stagnation of the bile stream, the resulting infection of that stream, and the formation of gall-stones. Constipation in women produced by the lack of exercise and the pregnant state also tends toward infection of the bile-ducts and gall-bladder. Women who have borne children are more subject to gall-stones, as shown by the fact that 114, or 84.41 per cent, of the 135 patients with gall-stones in the present series had borne children. Mayo found that 90 per cent of his patients with gall-stones had borne children, and that 90 per cent of these women identified the beginning of their symptoms with some pregnancy.

Gall-stones were present in 10.8 per cent of 285 cases of fibromyomata, in 14.5 per cent of 103 sizable ovarian cysts, and in 19.6 per cent of carcinoma of the cervix and body of the uterus. In 55 patients with gall-stones having these neoplasms, 40 or 80 per cent were over 40 years of age. The high percentage of gall-stones in patients with cancer of the uterus, 19.6 per cent, is probably explained by the age of the patients, since all the 11 patients were over 40 years of age. Looking at the question from another standpoint: in 382 patients with either fibroids, ovarian cysts, or cancers of the uterus but without gall-stones only 52.36 per cent were over 40. In other words: age, not disease, is the determining factor in the formation of gall-stones.

The gall-bladders were drained in all but 2 of the 57 cases in which the gall-stones were removed. The gall-bladders were attached to the parietal peritoneum, probably accounting for certain cases of soreness and dragging pain in the gall-bladder region considered in detail among the end-results. There were 2 operative deaths among the 57 pa-

tients. These deaths cannot be ascribed to the surgery of the gall-bladder but to peritonitis from unsuspected virulent, purulent foci in the pelvis. The convalescence of the patients from their pelvic operation was rarely prolonged by the additional gall-bladder operation.

The attempt to arrive at end-results from correspondence with patients is not altogether satisfactory. The more the form-letter asks the less information is secured; therefore inquiries were confined to presence or absence of symptoms referable to the gall-bladder.

The 135 patients with gall-stones were divided into two classes: (1) those from whom the gall-stones were removed, 57; (2) those where the gall-stones were palpated, but for one reason or another were not removed, 78. Forty-five, or 81.8 per cent, of the first class and 55, or 77.4 per cent, of the second class were traced and their replies analyzed as follows:

1. *Patients from whom gall-stones were removed incidental to pelvic disease.* Among these patients were two primary deaths and 45 out of the remaining 55 patients were traced. Of these 45 patients, 29, or 64.4 per cent, wrote that they had had no symptoms referable to the gall-bladder since their operations; that is, they had had no gall-stone colic, no jaundice, no pain in the gall-bladder region, nor symptoms of indigestion, which could be ascribed to biliary calculi.

On the other hand, 16 patients, or 35.5 per cent of the cases, reported symptoms having to do with the gall-bladder region. However, most of those with symptoms, 11 out of the 16 patients, had had no gall-stone colic nor other symptoms which would lead to the suspicion that they had had a recurrence of the gall-stones. Their symptoms were dragging pains in the right side in the neighborhood of the incision, or soreness in the same region. As before stated these symptoms are attributable to the method of operation employed, the dragging upward of the gall-bladder and fastening it to the parietal peritoneum. The occurrence of such symptoms in a certain proportion of cases where the gall-bladder is drained by this method has been noted by other observers and has led to drainage in the natural position of the gall-bladder and non-attachment to the parietal peritoneum. In a further series of cases this latter method will be employed with the expectation that the symptoms described above will be largely eliminated.

Five patients had distinct gall-stone attacks following removal of the calculi and drainage of the gall-bladder. One patient had the gall-bladder removed nine years after the cholecystostomy, no stones being found. Another patient was operated upon ten years afterward and had 15 stones removed. Still another patient, according to the testimony of her physician, suffered from repeated attacks of gall-stone colic just after returning home from the hospital but had had no recurrence for a number of years at the time of the report.

Summarizing these findings, it is fair to state that 40 out of the 45 patients, or 88.8 per cent, were free from gall-stone colic following the operations, while 11.1 per cent had a recurrence of the gall-stone colic. Whether all the stones were not removed at the time of operation or whether calculi re-formed it is difficult to say. Occasionally gall-stones do re-form, but from the testimony of those with the most experience their recurrence is exceedingly rare.

It is to be regretted that time has not permitted a careful perusal of the histories in reference to the presence of symptoms prior to the pelvic operations, but such a research is so time-consuming that it has been left for a subsequent paper. It can only be stated that, while in a few cases gall-stones were suspected prior to the pelvic operations, in no instance were the symptoms such as to overshadow the importance of the pelvic condition. However, it is only fair to say that more careful histories may greatly increase the number of suspected cases.

2. *Patients in whom gall-stones were found but not removed at the time of the pelvic operations.* As expected, the primary mortality was high in this class of cases, for it included many patients with complicated tumors and patients operated upon radically for cancer of the uterus. There were 7 primary deaths from causes it is unnecessary to detail, since they have no especial bearing upon the subject under discussion. They are only of importance as showing the severity of operations and why it was deemed inadvisable to remove the gall-stones at the same operation.

Of the 71 remaining patients, 55, or 77.4 per cent, were traced. Four patients died subsequently: 3 from causes unconnected with the biliary tract and 1 six years after the pelvic operation, from what was apparently hepatic cancer preceded by attacks of biliary colic.

Of the 51 surviving patients from whom replies were received, 32, or 62.7 per cent, had no symptoms referable to the gall-bladder, although one or more gall-stones were present in each instance when they were discharged from the hospital. On the other hand, 19 patients, or 37.2 per cent, wrote that they had had symptoms referable to the gall-bladder: 10 had had distinct gall-stone attacks; 6 had suffered from pain in the region of the gall-bladder; 2 had been operated upon for gall-stones, while 1 had been jaundiced.

Had it been possible to perform cholecystostomy at the time of these pelvic operations, over 90, instead of 62 per cent, of these 51 patients would have been spared symptoms referable to the gall-bladder. But in many of the cases additional operative procedures were clearly contra-indicated, and if they had been carried out would have greatly increased the primary mortality. Still in some of the cases the gall-stones could have been removed had the operator been possessed then of the evidence now at hand, that gall-stones left at the time of pelvic operations will give rise to distinct subsequent gall-

bladder symptoms in 30 per cent of the cases. In another series of cases the author states that he would remove gall-stones in every instance unless such a procedure were distinctly contra-indicated.

The author's conclusions are as follows:

1. Except when contra-indicated by the condition of the patient or the possibility of contaminating a clean peritoneum, the gall-bladder should always be palpated when the abdomen is opened for pelvic disease.

2. The small abdominal incision should give way to one large enough to permit of thorough exploration of the abdominal cavity.

3. Gall-stones will be found incidental to pelvic disease in from 10 to 15 per cent of cases.

4. Their frequency will depend upon the ages of the patients more than upon the variety of the pelvic disease.

5. As with gall-stones in general, in women with or without pelvic disease the older the patient the more liable she is to have gall-stones.

6. Gall-stones are much more common in women who have had children. In the present series of cases 84.4 per cent of the 135 women with gall-stones incidental to pelvic disease had borne children.

7. When gall-stones are removed at the time of pelvic operations, from 85 to 90 per cent of the patients will have no subsequent symptoms referable to the gall-bladder, provided the proper technique be employed.

8. When gall-stones are not removed, either because their mere presence is not thought sufficient to warrant their removal or because the condition of the patient forbids further operative procedure, 30 per cent of the patients will suffer subsequently from gall-stone attacks or other symptoms referable to the gall-bladder.

9. Therefore, since gall-stones are always liable to produce symptoms and at times are a distinct menace to the patient, they should be removed when the abdomen is opened for pelvic disease if it can be done without much additional risk to the patient.

Stanton, E. M.: The Re-Formation of Gall-Stones After Operation. *Ann. Surg.*, Phila., 1915, lxi, 226.
By Surg., Gynec. & Obst.

Stanton states that notwithstanding the relative frequency of clinical recurrences following gall-stone operations, actual re-formation of stones in the gall-bladder or ducts following their removal by operative methods is of extremely rare occurrence. This is proven both by the observations of surgeons having a large experience in gall-stone surgery and by the remarkably small number of reported cases in the literature.

Richardson in his extensive experience had not, up to a short time before his death, encountered a single case which he could look upon as a true recurrence. In 1,780 gall-stone operations, Kehr had only three cases of true recurrence.

Concerning the frequency of stones overlooked at the first operation, Kehr is aware of having,

himself, overlooked stones in 2.5 per cent of 1,105 cases, and Stanton believes that stones are overlooked at the first operation in from 2 to 10 per cent of cases, or even more, depending upon the skill of the operator and the class of cases which he is called upon to treat.

The reported cases of true recurrences are classified under the following heads: (1) re-formation of stones in the gall-bladder following cholecystostomy, 4 cases; (2) re-formation of stones in the ducts, 8 cases; (3) cases in which the new stones have formed upon unabsorbable suture material or threads from gauze tampons used during the first operation, 9 cases; (4) miscellaneous and doubtful, 8 cases.

In conclusion, the author states that if no foreign body is left in the gall-bladder or ducts after the operation, the re-formation of gall-stones is so rarely observed as to constitute an almost negligible factor in gall-bladder surgery. The two most important factors in determining the end-results of gall-bladder surgery are the complete removal of the calculi and the maintaining of sufficiently prolonged post-operative drainage. In the absence of organic duct strictures he believes that the question of cholecystostomy vs. cholecystectomy is largely one of technical expediency in individual cases. In many badly diseased gall-bladders it is easier and safer to remove the gall-bladder than to try to remove all of the stones and fragments of stones from the gall-bladder *in situ*; the same is true of gall-bladders containing great numbers of minute stones and cholesterol particles.

Einhorn, M.: Recent Studies of Pancreatic Secretion. *Tr. Am. Gastro-Enterol. Ass.*, Baltimore, 1915, May.
By Surg., Gynec. & Obst.

The author shows that the rennet ferment of the stomach and the rennet ferment of the pancreas are different in their action on milk. The gastric rennet curdles milk either raw or boiled, whereas the pancreatic secretion curdles raw milk and not boiled milk, the latter remaining fluid 4 to 6 hours. Gastric rennet curdles milk quicker than pancreatic rennet. From these and other experiments the author concludes that unboiled milk would be more easily digested than boiled milk.

He then describes the method of determination of the three main pancreatic ferments—amylopsin, steapsin, and trypsin—by means of glass agar tubes. He estimates the amount of ferments present, according to the length of agar column in the glass capillaries, that has undergone change by their action. He considers the following figures as average in normal individuals: amylopsin 6 mm., steapsin 3.5 mm., trypsin 2.5 mm. He examined the duodenal contents in about 175 patients, making 275 separate examinations.

He advocates the establishment of the amount of trypsin present as the standard of comparison for the functional efficiency of the pancreatic juice and accordingly makes the following distinctions:

Eupancreatism: normal function, all three fer-

ments present, trypsin normal amount, 1 to 4 mm.

Hyperpancreatism: increased activity; all three ferments present, trypsin in excess — above 4 mm.

Hypopancreatism: diminished activity; the three ferments present, trypsin decreased — below 1 mm.

Dyspancreatism: disturbed function; one or two of the ferments are absent.

Heteropancreatism: varied function; the presence and amount of ferments showing no constancy, but variations every now and then.

According to the quantity of secretion he distinguishes enchylia (normal secretion), hyperchylia, hypo-chylia, and achylia pancreatica (no pancreatic secretion at all). The latter is a very rare condition.

He then proceeds to analyze the condition of the pancreatic secretion in various diseases (ulcer of the stomach and duodenum, achylia gastrica, chronic pancreatitis, cirrhosis of the liver, cholecystitis and cholelithiasis, and diabetes mellitus) and to give the results according to the classification described above. The various conditions are illustrated with case histories.

Linder, W.: Acute Hæmorrhagic Pancreatitis; Report of Eight Cases. *Surg., Gynec. & Obst.*, 1915, xx, 204. By Surg., Gynec. & Obst.

In a very interesting article on acute hæmorrhagic pancreatitis, the author dwells at length on the clinical aspect of this serious disease. Fully recognizing the great difficulties in diagnosing acute pancreatitis, he yet maintains that the careful taking of the history and a thorough investigation of all clinical phenomena will enable one to make a probable diagnosis in a certain number of cases.

There is no distinct pathognomonic sign of acute pancreatitis; hence, the uncertainty in diagnosis. Linder, however, presents to the reader a symptom-complex of this disease which is very significant and which has proved of great value in his own personal experience. It is particularly important in all acute upper abdominal conditions to bear acute pancreatitis constantly in mind, for in many cases it may complicate another disease, as gall-stones, for instance, and may be entirely overlooked.

Many cases, Linder says, cannot be diagnosed until the abdomen is opened, and not until the characteristic serosanguineous or "beef-broth" fluid and the spots of "fat-necrosis" are found. He calls particular attention to those obscure cases in which the diagnosis is still not clear, even when the abdomen is opened. He has personally met with three such cases that came for examination with symptoms of acute intestinal obstruction. Upon opening the abdomen, there was no evidence of either mechanical obstruction or mesenteric thrombosis. But bearing in mind that acute pancreatitis might be the cause of the trouble, the operator at once tore through the gastrohepatic omentum, and obtained the serosanguineous fluid from the lesser peritoneal cavity.

The author has made two observations which he regards of great significance, viz:

1. The intense cyanosis of the distended small intestine, while there is no evidence of any mechanical obstruction or thrombosis of the mesentery.

2. The change in consistency of the greater omentum. Linder says that the omentum in these cases no longer has the usual fatty or oily feel, but becomes granular or gritty to the touch, which is very characteristic when once observed.

These two conditions have led him to suspect the pancreas as a cause of the trouble in otherwise obscure cases, and he was then able to verify this by going through the lesser omentum and releasing the fluid from under it.

Post-operative hæmorrhage is mentioned as a very serious complication. The author lost one patient from repeated hæmorrhages, the last one occurring on the seventy-fourth day after the operation proving fatal. On one occasion, this patient vomited large quantities of blood and also passed blood by bowel. It seems that the corrosive action of the pancreatic secretion may cause an erosion of a vessel or perforation of a neighboring organ. Some cases of sudden death are due to hæmorrhage into the pancreas itself, the so-called apoplexy of the pancreas.

The prognosis in acute hæmorrhagic pancreatitis is very grave and the mortality still high. Of eight cases operated on by Linder, four died, giving a mortality of 50 per cent. In a series of cases reported by Prof. Korte, the mortality is about the same. Early diagnosis and prompt surgical intervention, the author believes, will yield more favorable results in the future.

The treatment of acute hæmorrhagic pancreatitis is entirely surgical; and the author has been guided in this by the principles laid down by von Mickulicz that "acute pancreatitis is to be looked upon as an acute phlegmon, which runs a very severe course, and the only rational therapy is to open the focus of infection by multiple puncture and drain the toxic and infectious tissue."

HERMAN SHANN.

Roblee, W. W.: Splenectomy in Primary Pernicious Anæmia. *J. Am. M. Ass.*, 1915, lxiv, 796.

By Surg., Gynec. & Obst.

Primary pernicious anæmia is probably due to a toxin which may be of bacterial, chemical, or parasitic origin, and in some cases there is an increase of the unsaturated fatty acids. The spleen seems to exercise an influence favorable to the elaboration of these substances. These toxins appear also to cause a hyperæmia of the splenic pulp because of changes in the blood-vessels, which cause the blood to be poured directly into the pulp. The presence of the spleen seems to cause a diminution in the amount of the total fats and cholesterins of the blood which are anti-hæmolytic. For these theoretical reasons, and because of the numerous cases on record in which a cure has been obtained in Banti's disease, which is closely related to pernicious anæmia, splenectomy appears to be indicated in these and the closely associated anæmias.

Removal of the spleen, either in sickness or in health, does not affect the patient injuriously. The operative mortality is not high even in very weak patients.

A rapid and striking remission of all symptoms appears, the change in the blood picture coming quickly and quite certainly. Other methods of treatment should be combined with splenectomy, as more than one factor is doubtless at work in these cases. It will certainly prolong life and, with our incomplete knowledge of the etiology of this disease and the certainty that death will come under every known method of treatment, patients should be offered this additional chance of recovery.

EDWARD L. CORNELL.

MISCELLANEOUS

Williams, J. T.: Visceral Ptosis. *Boston M. & S. J.*, 1915, clxxii, 13. By Surg., Gynec. & Obst.

The author briefly reviews the present knowledge of the mechanics, causes, and symptoms of visceral ptosis and sets forth in detail the varying ideas as to its treatment. The following conclusions are reached:

The conflicting evidence reviewed is proof that none of the various methods of treatment has proved universally satisfactory. It is fair to say, however, that but few men have carried out any of the outlined procedures with the vigor ordinarily applied to the treatment of other pathological conditions. Concerning the surgical treatment, the amount of work done so far is too small to base an opinion upon. The number of surgical procedures which a single case demands prohibits operative treatment in a considerable proportion of cases. Gymnastic treatment is of great benefit early in the process, but, unfortunately, the anatomical changes are so extensive in advanced cases that but little help can be expected from exercises.

Corsets, although, of course, only palliative and never quite relieving the patient's symptoms, are of much value and probably in advanced visceral ptosis will continue to give more comfort than anything else.

The greatest prospect for improvement lies in prophylaxis, as pointed out by Goldthwait. Certain individuals are predisposed to ptosis by anatomical peculiarities. These patients should be easily recognized by their tendency to the ptotic figures and by general muscular insufficiency. If such persons are taken early in life, their attitude corrected and their muscles developed by exercise and proper food, it should be possible to prevent the development of extreme cases of visceral ptosis.

EDWARD L. CORNELL.

Skeel, R. E.: An Analysis of the Mortality of Abdominal Surgery. *J. Mich. St. M. Soc.*, 1915, xiv, 110. By Surg., Gynec. & Obst.

The study is that of the abdominal operations performed by the author in St. Luke's Hospital,

Cleveland, from July 15, 1908, to July 15, 1914. A number of patients operated upon during the same time, both in other institutions and in private houses, are not included, although the results are approximately the same, but the technique was not so thoroughly under control, neither could the morbidity and final results be so accurately ascertained. The study is confined to abdominal operations.

Salpingo-oöphorectomy. In 142 salpingo-oöphorectomies no deaths resulted. With one exception, all were performed for true inflammatory lesions, following either gonorrhœal, puerperal, or instrumental infection. An occasional case presented no adhesions, but for the greater part the typical inflammatory exudate was encountered with adhesions to the uterus, bladder, or intestine, and the separation of such adhesions is not counted as a distinct operation.

Twenty-seven patients were operated upon for tubal pregnancy without mortality, and in only one case was operation deferred until the patient was in better condition. This one had an infected hæmatoma in the cul-de-sac, which was walled off from the general abdominal cavity by adhesions above it. It was opened and drained, but repeated hæmorrhage from the tube into the abdominal cavity made radical operation imperative a few days later.

Following 85 ovariectomies for tumor there were two deaths. The first of these occurred in the third week after operation while the patient was up and about the ward. The symptoms were those of pulmonary embolism, and this diagnosis was confirmed by autopsy. The second death was that of a patient who not only had two large papillomatous ovarian cysts removed, but who suffered also from mitral insufficiency with cardiac dilatation, parenchymatous nephritis, and ascites. The operation was done to relieve the enormous abdominal distention and the discomfort which it caused, but without any hope of cure. The patient remained in the hospital for two months and then succumbed to the cardiorenal changes.

Few myomectomies were performed, and these were for small or pedunculated growths only, the uterine myomata being so universally multiple that when operation was called for hysterectomy was usually chosen.

Of the 92 supravaginal hysterectomies for benign conditions, none died in consequence of the operation, but one death occurred in the hospital from perforation of an undiagnosed cæcal ulcer.

Of the complete hysterectomies for benign conditions, the one death which took place was due to nephritis, followed by bronchopneumonia three weeks after operation. This was an instance of profound anæmia from pre-operative hæmorrhage due to a submucous myoma.

Uterine suspensions and fixations resulted in one death. The cause of death was a Littre's hernia through a small opening which was left in the broad ligaments after a round ligament shortening.

There were, therefore, 6 deaths following 495 classified pelvic operations.

In the suprapelvic portion of the abdomen 86 operations were performed upon the biliary tract, with 5 deaths. The first of these deaths was due to injury to the pancreas and was a clear operative death, the pancreatic secretion digesting the catgut sutures used to close a preëxisting fistulous opening into the duodenum. The second death was due to diabetic coma. Another death was due to intestinal hæmorrhage ten days after an operation for chronic cholecystitis in a patient who was not jaundiced. The last deaths were those of two patients who had lost much weight through years of suffering, one of whom had discharged great quantities of fluid through a biliary fistula, which persisted after a cholecystostomy.

Of 93 herniotomies for conditions short of actual strangulation, one patient with double irreducible scrotal hernia with one side incarcerated died from pneumonia, which began on the third day after operation and terminated on the eighth.

Operations for acute appendicitis and its complications. After 170 operations five deaths occurred, all in late cases; that is, in patients who had been ill more than two or three days. One patient, whose entire cæcum was gangrenous, died from intense toxæmia, one from septic pneumonia, and one from intestinal obstruction (whether septic or organic was never determined); but the persistence of normal temperature until just before death causes one to suspect that it was organic, although an enterostomy gave no relief.

The 380 patients upon whom appendectomy was done for chronic or recurrent appendicitis, or as an incident in the course of other abdominal operations, recovered as a matter of course, it being a curious fact that none of the patients died from whom the appendix was removed casually, excepting the case of round ligament shortening mentioned earlier.

The unclassified operations present the greatest absolute number of deaths as well as the highest percentage of those having any considerable numbers.

There were no deaths after pylorectomy, circular resection of the stomach, or gastrectomy, but there were five deaths following gastro-enterostomy, an operation which, considered by itself, seldom is followed by death. The first occurred in a victim of acute dilatation of the stomach, which was the terminal event of a case of carcinoma of the pylorus. One death was from lobar pneumonia, which began eight hours after an operation in which nitrous oxide was the anæsthetic. Another took place eleven days after an operation for benign stenosis in a man of 62, who had been ill for years. Previous to operation his aspect was that of an individual who had undergone slow starvation to a point beyond recovery, and his post-operative history bore out that conclusion. In another, death was due to an enormous ulcer in a contracted stomach with almost complete closure of the pylorus.

The patient died on the second day, probably from shock, although the exitus was very sudden. Autopsy showed no leakage and no peritonitis. The last death following gastro-enterostomy took place three weeks after operation and was due to an unrecognized myocardial degeneration.

Two deaths occurred after operation for rupture of the uterus. In one the uterus had been ruptured during an attempted dilatation and curettage several days before and the pelvis was filled with the mercuric solution used for irrigation. This patient had through-and-through drainage, but died from true mercurial poisoning with a combination of nephritis and dysentery. Intestinal resection following a high enterostomy for acute obstruction caused one death from straight operative shock.

A recapitulation of the causes of death is of interest:

As distinguished from ordinary surgical deaths, there were 8 plain operative deaths: 2 from shock in patients already mortally ill; 1 from operative injury to the pancreas; 1 from post-operative obstruction and perforation; 1 from uræmia; 1 from pulmonary embolism; and the other 2 were the gall-stone cases tabulated as dying from asthenia. In addition, there were 2 deaths from pneumonia, which succeeded clean operations at such a date that the origin of the pulmonary infection is in doubt.

Excluding the pneumonia deaths, the operative deaths were 8 out of 1,032 patients, or .78 of 1 per cent; including the pneumonias, 1 per cent.

The gall-bladder patient with pancreatic injury, the patient upon whom a round ligament operation was performed, and the patient with incarcerated hernia were the only ones who did not have an early death staring them in the face at the time operation was performed.

The 4 classical causes of death after abdominal operations are shock, hæmorrhage, septic peritonitis, and intestinal obstruction. Both deaths from shock in this list were found in patients desperately ill from obstruction in the digestive tract. Nothing else was productive of enough shock to cause serious anxiety.

No death took place from septic peritonitis, except as it followed intestinal perforation, and no death from peritonitis occurred in the series of operations for acute appendicitis with all its complications.

No death occurred from post-operative hæmorrhage, the one death from hæmorrhage being due to bleeding before operation.

Post-operative obstruction caused two deaths, one clean and one pus case.

Morbidity. In the patients who recovered there was one instance of post-operative obstruction following operation in a clean field and one following the removal of a gangrenous appendix. The first was diagnosed early and relieved by the separation of adhesions; the last had an enterostomy performed by which intestinal resection was later necessitated,

from which the patient readily recovered. Four clean cases are known to have incisional hernias, 2 cholecystostomies, and 2 hysterectomies. It is likely that others have the same annoyance and many of the appendicitis cases complicated by abscesses or peritonitis and drained are known to have hernias which give but little trouble. No abdomen was reopened for hæmorrhage, although the walls of some of the late appendicular abscesses oozed rather profusely. Two patients in the entire list suffered a low-grade infection in the abdominal cavity, which probably was introduced at the time of operation, and both recovered after the incision of a localized abscess.

Serious post-operative shock was absent unless there was hæmorrhage or an operation was performed on a desperately ill patient.

There was one example of the extreme type of post-operative dilatation which followed an operation for general peritonitis due to gangrenous appendicitis. This patient recovered after frequently repeated lavage. Another instance occurred shortly after a gastro-enterostomy and occlusion of the pylorus for duodenal ulcer. The patient recovered.

Tympany beyond the most moderate degree was rarely seen save in patients whose abdominal cavities were infected before operation. In such patients tympany was recognized as a conservative effort on the part of nature to localize the infection, and unless vomiting and elevation of temperature and pulse coincided in pointing to toxæmia from stasis nothing was done save to keep the lower bowel empty by means of enemas.

No discussion of post-operative mortality is complete without some discussion of anæsthesia. Chloroform was given to asthmatics only. Ether, nitrous oxide and oxygen, and local anæsthesia were used, the frequency of their use being in the order named. Ether was the anæsthetic of choice for routine abdominal work in the absence of coryza, bronchitis, nephritis, and tuberculosis.

Local anæsthesia plus nitrous-oxide was first used by the author December 13, 1906. The object was to minimize the amount of general anæsthetic inhaled by shortening the period during which general anæsthesia was necessary, should it be needed at all. By this method the abdominal incision is made under local infiltration alone and either nitrous oxide or ether administered when the exploration or operation reaches an extremely painful stage. No thought has been given to its minimizing shock through blocking all the sensory nerves from the operative field, since, if all the sensory nerves could be blocked, the operation would be completed under local anæsthesia and a general anæsthetic would be required only in unmanageable patients. The method is thus not to be confused with the anoci-association method of Crile, although the author's opinion, based upon his experience with local anæsthesia, is that total abolition of sensation from an abdominal field is impossible, and that, therefore, the advantages of both methods are due

PERCENTAGE TABLE

	Deaths	Per Cent
Salpingo-oöphorectomy for inflammatory disease....	142 0	.0
Tubal pregnancy.....	27 0	.0
Ovariectomy for tumor.....	85 2	2.35
Myomectomy.....	7 0	.0
Supravaginal hysterectomy for benign conditions....	92 1	1.00
Panhysterectomy for benign conditions.....	10 1	10.00
Panhysterectomy for malignancy.....	7 1	14.28
Suspension, fixation, and round ligament shortening.	125 1	.8
Total classified pelvic operations.....	495 6	1.4
Gall-tract operations.....	86 5	5.81
Strangulated hernias.....	9 0	.0
Other herniotomies.....	93 1	1.07
Operations for acute appendicitis.....	170 5	2.94
Chronic and incidental appendectomies.....	380 0	.00
Unclassified.....	738 11	1.49
	127 15	11.81
Total abdominal operations.....	1,360 32	2.35
Total patients.....	1,032 32	3.10
Deaths directly traceable to operation.....	1,032 8	.78
*Deaths directly traceable to operation.....	1,360 8	.59

*Incorrect method of computing mortality.

exclusively to the fact that the quantity of general anæsthetic administered is greatly reduced. In this way the resisting power of the patient is not lowered and his vitality is conserved, so that an operation which would be extrahazardous if carried out and completed under full surgical anæsthesia is done with less comfort both to patient and operator, but with a greatly diminished risk to the former.

An analysis of the facts presented, together with others familiar to the author, seems to justify the following conclusions regarding *surgical* as distinguished from *operative* mortality.

1. There are certain combinations of circumstances in which surgery is helpless once the whole condition stands revealed.

2. Intercurrent disease like pneumonia, which in the present list is the largest single mortality factor, presents a definitely perceptible risk. Whether it is a coincidence, the result of the disease for which operation is performed, the result of the anæsthetic, or the result of the operation itself is not always clear.

3. Explorations are bound to be made for conditions usually malignant that are not otherwise diagnosable, and which on exploration prove to be inoperable; the patient sooner or later succumbs to his disease.

4. In spite of all these facts, delay is, after all, the greatest single cause of surgical abdominal mortality.

As regards operative deaths:

1. There always will be an occasional death from pulmonary embolism and intestinal obstruction, bearing in mind that the latter condition is far more difficult to diagnose as a post-operative complication than as a primary disease.

2. The death-rate from shock should be constantly lowered by painstaking care in controlling hæmorrhage, gentle handling of the abdominal contents, avoidance of traction on mesenteries,

simplifying the technique, and adjusting the duration of the operation to the patient's condition.

3. Death from sepsis is not to be apprehended unless the patient is already septic or the intestinal tract opened. Painsstaking asepsis combined with constant effort to preserve the vitality of the tissues and conserve the patient's general resistance has reduced the deaths from sepsis to the vanishing point.

4. Primary anæsthetic deaths should be almost unknown since chloroform has been banished to oblivion. Local infiltration with a weak solution of novocaine presents no danger, and the novocaine-ether or novocaine-nitrous oxide sequence renders

the danger of ether poisoning or nitrous-oxide asphyxia practically nil, no matter how desperately ill the patient may be.

It is the author's belief that proper selection of the anæsthetic for the case and proper handling of the tissues, together with correct determination of the amount of operating which the patient can safely stand, will do more to lessen the mortality rate in the hands of the average surgeon than any attempt to follow spectacular methods under fanciful names which appear like a comet, loom large for a time, and are forgotten as soon as the commotion produced by their unusual character has had time to subside.

EDWARD L. CORNELL.

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS. CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Stratton, R. T.: The Relation of the Periosteum to Bone Vitality. *Calif. St. J. Med.*, 1915, xiii, 23.
By Surg., Gynec. & Obst.

The author states that it is the general opinion even among experienced surgeons that bone which has been denuded of periosteum by suppuration will become necrotic. His own experience and that of a few others does not support this view. Whether or not such bone will live depends upon whether or not its nutrition has been impaired by arterial and capillary thrombosis as a result of the septic process. In one of his cases in which a large sequestrum was removed, an area of denuded white bone was allowed to remain and, as subsequent history showed, it did not become necrotic. Another case reported showed the same result. Though the bone be deprived of its periosteal nourishment it still has the nutrient artery, and unless this major circulation is impaired there will be at least only a superficial necrosis.

W. A. CLARK.

Simmons, C. C.: The Treatment of Osteomyelitis. *Surg., Gynec. & Obst.*, 1915, xx, 129.

By Surg., Gynec. & Obst.

The author gives an analysis of 97 cases of all forms of osteomyelitis, both acute and chronic, as seen in a general hospital, with a classification of the disease and suggestions as to the treatment to be instituted in the various types.

The cases are divided into the localized and diffuse types, and cases with and without bone destruction, as well as acute and chronic.

Thirty per cent of the cases were acute. Many of these were of the mild type, and special emphasis is laid on early diagnosis and prompt treatment. An immediate operation in the mild acute cases may relieve the tension, and the wounds often heal without bone destruction and the formation of a sequestrum.

Six cases of subperiosteal resection of the tibia are reported, in five of which the operation was done at the time of election. In four of these regeneration was satisfactory. In the fifth and in one case in which the shaft of the tibia was removed five days after the onset of symptoms, no regeneration occurred and a bone-graft from the crest of the other tibia was used to fill in the defect. The results were satisfactory.

In all cases of less than one year's duration the prognosis was good unless such bones as the pelvic were involved, if the patient was properly treated, but secondary operations were generally necessary.

Treatment of the chronic long-standing cases was unsatisfactory. In the author's hands the use of Moorhof's bone wax was unsatisfactory. The best results were obtained by obliterating the cavities in the bone by flaps of living tissue either, skin and fat, or muscle.

The author summarizes as follows:

1. In acute cases, open to the medulla and pack the wound. Prognosis good. The treatment and prognosis varies of necessity somewhat in these early cases but in general the earlier the operation the better the prognosis.

2. In cases where bone destruction has taken place, seen less than three months after the onset of the disease, perform subperiosteal resection when possible. Prognosis good.

3. In chronic cases of bone abscess of less than one year's duration, drain and pack. Prognosis good.

4. In chronic cases with bone destruction of less than one year's duration, remove sequestrum and pack. Prognosis good.

5. In old chronic cases, either with bone destruction or of the bone abscess type, remove necrotic areas and drain. Try to obliterate the cavity with flaps of living tissue. If this cannot be done, use bone-wax, pack, or sterilize the cavity, allow it to fill with blood-clot and close without drainage. If the cavity can be obliterated, the prognosis is fair, otherwise poor.

6. The treatment when such bones as the pelvic are involved is unsatisfactory and the prognosis problematical.

7. When in old chronic cases the whole shaft of a long bone is badly diseased the possibility of resecting the entire shaft with bone transplantation should be considered before amputation is resorted to.

Wallace, W. L.: Surgical Treatment of Acute Osteomyelitis. *N. Y. St. J. Med.*, 1915, xv, 70.
By Surg., Gynec. & Obst.

As early as 1880 this condition was treated from a surgical standpoint. The disease is a secondary or pyæmic infection of bone, resulting from a boil, wound, or inflammation, or from trauma occurring in young persons and starting in the spongy portion of the shaft side of the epiphyseal cartilage.

The staphylococcus is the bacteria producing acute osteomyelitis, and its primary focus may be anywhere in the body, and may or may not be determinable. Trauma, exposure, and inflammatory sore throat are probable etiologic factors.

In infancy osteomyelitis breaks through the cartilage and involves the joint; in adults, no cartilage being present, the joint is readily affected, while in youth the cartilage protects the joint, but the abscess usually ruptures externally and the entire shaft is liable to be destroyed. The tibia and femur are most commonly affected in boys because of the tendency to trauma. Germs of low virulence favored by exposure, trauma, cold, exhaustion, or strain will cause metastases. The symptoms are similar to rheumatism, demonstrated by chill, prostration, headache, delirium, and coma, together with the local symptoms of inflammation.

He summarizes as follows: Osteomyelitis is a pyæmia, a secondary abscess in a case of mild or severe septicæmia, and is carried by the blood. Intense pain in a young person with chill, fever, high leucocytosis, and extreme localized tenderness probably means osteomyelitis. The medullary cavity should be drained thoroughly. He states that rheumatism is always a metastatic infection.

H. W. MALTBY.

Symonds, C.: Chronic Abscess of Bone; Its Treatment. *Guy's Hosp. Gaz.*, 1915, xxix, 102.

By Surg., Gynec. & Obst.

The author discusses five cases of central abscess of bone of pyæmic origin. In showing specimens of central bone abscess from the museum of Guy's Hospital he notes that the labels included only two varieties, tuberculosis and congenital syphilis. A third variety due to general septic infection is described by the author and examples given in the cases reported. The abscess started from a deposit of bacilli during an acute illness. The bacilli die out but the pus remains and by constant irritation causes a rarifying osteitis. The process is very slow, extending over many years, and causing no symptoms in the dormant condition.

In one case a woman of 42 had an acute illness at 12 with abscess in one femur and one tibia with loss of bone. She recovered and was well until at 39 another piece of bone was discharged from the femur, and at 42, after pain in the tibia for three months, a pus-pocket was opened.

In another case a sinus of eight years' standing in the upper part of the tibia was enlarged and drained with silver wire. This patient gave a history of acute illness five years before, from which she recovered with a dislocated hip.

A man of 32 with a sinus in the tibia had had at 13 an acute necrosis of the tibia which healed and reopened after 11 years. He was relieved of pain and swelling by a silver-wire drain.

Another case, a boy of 17, with a history of intermittent pain and swelling in the ankle, diagnosed as tuberculosis, was relieved and recovered completely in eight months after the evacuation and draining of an abscess about a quarter of an inch in diameter in the lower end of the tibia.

The author's explanation of these localized abscesses is that rupture of small vessels by trauma permits the escape of organisms from the blood. The treatment advocated is trephining the bone and maintaining drainage with a silver tube or wire.

W. A. CLARK.

Goddu, L. A. O.: Enchondroma. *Boston M. & S. J.*, 1915, clxxii, 402.
By Surg., Gynec. & Obst.

Goddu reviews the literature of this subject and reports three cases operated upon by himself.

Enchondromata are considered as benign growths, which probably spring from islands of cartilage left in abnormal situations as the result of imperfect fetal development. They usually occur near joints or at the epiphysis of the long bones.

The tumors are rarely pure cartilage; they usually show deposits of lime salts and undergo marked degeneration.

The patients complain of swelling and of inconvenience in motion, but not of pain unless there is direct impingement on a nerve. The general health is not impaired and subjective symptoms are absent. The X-ray is of great aid in making a diagnosis. Views at different angles should be taken in order that other small growths will not be overlooked.

The treatment is radical removal of the growth. Recurrences do not necessarily mean malignancy, and an amputation should not be considered until all conservative methods have failed.

R. B. COFIELD.

Ginsburg, N.: Acute Surgical Metastatic Infections with Especial Reference to Bones, Joints, and Periarticular Structures. *Penn. M. J.*, 1915, xviii, 341.
By Surg., Gynec. & Obst.

This paper embraces a short discussion of the etiology, diagnosis, and treatment of non-traumatic acute surgical metastatic infections involving bones, joints, and periarticular structures.

The author comments upon the great advancement in the last few years in evolving reconstruction operations upon bone and joints, and emphasizes the fact that the real management of the results of these infections is really diagnosis with the view of recognizing the presence of the micro-organismal agent underlying production of the clinical syndrome of the acute intoxication. In considering the etiology, Ginsburg calls attention to the fact that lack of clinical and bacteriological proof of the existence of idiopathic rheumatic arthritis as an entity is a positive reason for demanding that surgical observation be made of these cases from the very outset of the symptoms. He believes that the bacteriological evidence of the type of joint infections is not necessarily dependent on the isolation of the micro-organism in the aspirated fluid. The diagnosis should be made clinically, without waiting for the bacteriological findings. The pneumococcal type is accompanied by great articular infusions. The streptococcal type is accompanied by joint fluid from which the organism is readily isolated; but it is best to act on the clinical evidence without waiting for the bacteriological diagnosis.

In diagnosis, he points out that the streptococcal metastatic arthritis occurs early, in from one to five days; while the gonococcal arthritis occurs two or three weeks following the primary infection, and typhoidal osseous and arthritic involvements usually occur at the time when convalescence seems assured.

Under the heading of treatment, he again calls attention to the value of early recognition of the disease from clinical symptoms, and urges such treatment as repeated aspirations, with the injection of two to two and one-half per cent liquid formaldehyde in glycerine, prepared twenty-four hours before using. Separation of the joint surface by extension should be applied to the arm in case of infection as readily as to the leg.

H. B. THOMAS.

Elliott, G. R.: Arthritis Urica. *Tr. Am. Orth. Ass.*, Detroit, 1915, May. By Surg., Gynec. & Obst.

With the end in view of clearing up a subject still misunderstood, Elliott contrasted the arthritis of gout with other types of arthritis. He produced specimens of many gouty joints, giving X-ray studies and actual dissections of same. He also showed many X-ray studies and dissections of the usual kinds of chronic arthritis of well-recognized non-gouty character.

He made the point that findings of the two types are entirely different. He showed that in the gouty type, contrary to the teaching of many, there was little or no atrophy of bone even in long-standing cases, contrasting with a marked atrophy of bone in other types of arthritis, especially of the now generally believed chronic infectious types. In the gouty was found none of the wholesale bone destruction found in the other types of arthritis; on the contrary there was increased production of new bone and bony outgrowths. In the gouty specimens were

found eburnated joint surfaces contrasting with the extensive destruction of joint surfaces seen in the other types.

This, he pointed out, argued for an entirely different pathological process at work and made the differentiation X-ray picture a reliable one if properly interpreted. Elliott had established a correct diagnosis of his cases through proper metabolic laboratory tests.

Cooley, E. L.: Plaster Cast in Acute Joint Infections. *Med. Fortnightly*, 1915, xlvii, 27.

By Surg., Gynec. & Obst.

Acute joint infections respond readily to immobilization; thereby pain is lessened, swelling and periarticular infiltration diminished, consequently lessening the danger of pus. Joint function is not impaired by immobilization even by extravasation of serum into the joint, but when fibrin is deposited and villi form function is impaired.

Immobilization must be complete, to the joints proximal and distal to the one involved. Plaster cast more successfully immobilizes, is ready of application, is cheap and available, and wounds can be made very accessible by removing a portion of cast over the area involved. H. W. MALTBY.

Heineck, A. P.: A Contribution to the Study of Joint-Bodies from Within Present in Articulations, Otherwise Apparently Normal. *Nashville J. M. & S.*, 1915, cix, 49.

By Surg., Gynec. & Obst.

The author reviews all cases of joint-bodies unassociated with joint lesions other than those due to their presence or caused by the etiological trauma, including those originally reported in English, French, and German from 1890 to 1913 inclusive.

All cases were verified by operation or by post-mortem findings. He excluded all cases with insufficient data; fractured or displaced semilunar cartilages; bodies of extra-articular origin; foreign body lodged in the joint capsule; diverticula communicating or not to the general synovial cavity; pendulous chondrosarcomata, etc.; e.g., mono- or polyarticular arthritis deformans.

Age incidence is tabulated as to time of operation, relief, etc. Males predominate, as they are more exposed to trauma, etc. Articulations involved show that the elbows and knees are mostly involved—knees five times more frequent; right elbow more than left; in the knees about equal. Direct or indirect trauma appears to be the main cause.

The bodies may arise from (1) cartilaginous, osseous, or osteocartilaginous articular surfaces; (2) fibrous clot following hemorrhage; (3) lipomata from subserous fat; (4) free or pedunculated fibrous enchondroma, osteoma, or ecchondrosis; (5) post-traumatic thickening of synovial and underlying tissue; and (6) cartilaginous nodes in the synovia stimulated to growth by trauma.

The great majority of bodies are free and consist of cartilaginous or osteocartilaginous tissue.

Heineck emphasizes the value of good plates properly interpreted in diagnosis and differentiation from other intra-articular conditions. The semi-lunar cartilages consisting of non-osseous tissue are not seen in X-ray plates, while those of osseous or osseocartilaginous origin appear as shadows.

Treatment consists of arthrotomy, the line of incision being on the side of the body. The author advises longitudinal incisions and advises against diversion of the lateral ligament. Joint lavage is condemned as unnecessary and dangerous.

The synovia and capsule are closed with catgut, the overlying tissues and non-absorbable sutures and the joint being immobilized in a plaster cast.

All patients operated upon recovered functionally and anatomically. Non-surgical treatment was valueless.

H. W. MEYERDING.

Ely, L. W.: Joint-Mouse. *Ann. Surg., Phila.*, 1915, lxi, 80.
By Surg., Gynec. & Obst.

Ely discusses briefly the etiology of joint-mouse and reports a case in which the body originated from the medial femoral condyle following an injury to the knee.

Six months after the accident the joint-mouse was removed, and microscopic examination showed that it consisted of cartilage throughout except for a thin layer of new connective tissue on one surface.

While many of the cartilage cells were dead, distinct evidence of proliferation was present, demonstrating that the cartilage could not have been killed at the time of the injury and dissected off later by the marrow, as in the recent experiments of Axhausen on animals' cartilages.

ROBERT B. COFIELD.

Breton, P. le: Foreign Body in the Psoas Muscle. *N. Y. M. J.*, 1915, ci, 352.

By Surg., Gynec. & Obst.

Le Breton cites the case of a 14-year-old boy with a pin in his psoas muscle, simulating hip disease. He had been healthy until 1913, except for an attack of scarletina when five years old. In the spring he began having pain in front of his right thigh at night, causing him to limp. He improved during the summer, but lost 10 pounds the following winter and became anæmic. The thigh flexed 48 degrees, there was atrophy of the thigh of $1\frac{1}{2}$ inches, of calf one inch. With the hip flexed, motion was painless. Palpation in the right flank showed tender swelling in the psoas. An X-ray of the spine with Pott's disease in mind showed a common pin parallel to the iliac crest 2 inches from the spine. An incision was made parallel to the crest of the ilium, the muscles were separated, and the peritoneum retracted. A cut directly toward the ilium opened a U-shaped abscess, one horn inside, the other outside, the pelvis. Much foul pus escaped. The sac was dissected out and at last the pin, covered with crystals, was removed from in front of the sacro-iliac joint away from the position shown in the X-ray plate. A drainage tube was left in,

and the wound healed completely in two months. No history of the entrance of the pin was obtained.

C. A. STONE.

Parsons, A. L.: The Choice of Incisions in Hand Infections. *Am. J. Surg.*, 1915, xxix, 6.

By Surg., Gynec. & Obst.

Because infections less frequently involve the dorsal surface, Parsons only discusses those of the palmar surface and limits his discussion to acute and subacute infections that involve the tendon sheaths and fascial spaces of the palmar surface, and to the sites of the several incisions which best drain the hand with the least amount of damage to the adjacent structures.

He briefly reviews the anatomy of the palmar tendon sheaths. Those of the index, middle, and ring fingers extend from the base of the terminal phalanx to Kanavel's line, roughly speaking, a thumb's breadth above the web. It is to be remembered that these sheaths pass near the proximal interphalangeal joint, and for this reason they are more readily involved than the metacarpophalangeal joints which are at some distance from them. The sheath of the flexor longus pollicis in the large majority of instances continues upward into the radial bursa; the little-finger sheath does the same thing to join the ulnar bursa, and in half the instances these two bursæ communicate with each other.

He describes four fascial spaces:

1. The terminal phalangeal space, by far the most common site of felons, is divided into many compartments by fascial bands from the bone to the skin, and because of the proximity of the vascular supply, pressure explains the frequent necrosis of that portion of the bone in felons.

2. In the web space, or that between the fingers, infections may extend to the dorsum, to the adjacent fingers, or to the two spaces about to be described.

3 and 4. The thenar and midpalmar spaces, which are best taken together, occupy the palm below the tendons and lie upon the interossei and adductor muscles. The third metacarpal bone is the landmark of their separation, except at the wrist, where at times it is found that these two spaces communicate. These spaces lie between the deep and superficial arches, the former being dorsal and the latter palmar to it. Infections may occur in any one of these sheaths or in all, as is only too often the case when the patient is first seen.

Terminal phalangeal infections fortunately tend to become localized, but if neglected they may extend to the fascial spaces of the web or upward along the tendon sheaths. Index, middle, and ring-finger infections usually rupture through the skin, and the proximal interphalangeal joint is often involved, with subsequent necrosis of the middle phalanx. Middle-finger infection rarely infects the thenar space; little-finger infections behave in a like manner where they do not communicate with the ulna bursa; otherwise infection rapidly extends to

the forearm under the profundus. In a like manner thumb sheath infections may invade the forearm through the radial bursa.

Pus in the thenar space may involve the mid-palmar space or otherwise involve the forearm. Besides the above most frequent structures involved, Parsons mentions osteomyelitis of any of the bones, invasion of the wrist-joint, rupture through the dorsum, and other complications. He advocates the use of Kanavel's lateral incision, supplemented at times by a counteropening, and he states that he has had no impairment in tactile sensation when it was used.

When the sheath is infected, he opens it freely by extending the incision the full length of the infected area, and he even makes these incisions over the joints as warned against by White. He claims that the keynote to the situation is to dress the finger in extension to prevent prolapse of the tendon and no subsequent sloughing will follow.

In little-finger infections where the ulnar bursa is not infected nothing should be done, for it is best to proceed from the known infected area to the unknown. Aspiration of the tendon sheaths to ascertain if infected he thinks is of theoretical value. If the ulnar bursa is found to be involved, it should be opened through the palm to the ulnar side of the tendon, and if this infection has extended to the forearm this incision may be extended around the uncinat hook and the annular ligament may be sacrificed. Kanavel states that when this is found necessary, if the wrist is dressed in extension no harm will result. Thumb infections must be opened along the proximal phalanx and through the thenar muscles, and because the motor nerves to these muscles lie one thumb's breadth distal to the lower border of the annular ligament, the incision should stop there. The upper end of the radial bursa should be drained by lateral incisions in the wrist; this space is nearly always infected and usually ruptures.

Because of the frequency of communication of these two bursæ, Picque advocates making four incisions: along the thumb, little finger, and one on each side of the flexor tendon group down to their respective bursæ. In web infections he advocates either a dorsal or palmar incision, sparing the deep interosseous ligament to preserve the integrity of the hand.

The thenar space lying immediately on the adductor transversus is best approached from the dorsum of the index-thumb web, just radial to the middle of the index metacarpal bone and level with its palmar surface. The methods of attacking the upper ends of the ulnar and radial bursæ are best done by the lateral wrist incisions, as advocated by Kanavel. Parsons' conclusions are as follows:

In operating on hand infections a general anæsthetic should be employed.

2. A suitable tourniquet should be applied.

3. For drainage either gutta-percha tissue or gauze saturated with balsam of Peru and oleum ricini should be used.

4. As a rule the use of the wet dressings is kept up too long.

5. The operation should be slowly done and each structure identified.

LEWIS B. CRAWFORD.

FRACTURES AND DISLOCATIONS

Jackson, W. R.: Operative Treatment of Fractures.

Surg., Gynec. & Obst., 1915, xx, 357.

By Surg., Gynec. & Obst.

Operations — open and subcutaneous for fractures — are now done more frequently than formerly, because of the frequent X-ray examinations. Such examinations after simple fractures are adjusted disclose displacements in 85 per cent of cases.

When coaptation cannot be effected or maintained by the usual methods of manipulation, extension, and counterextension, and splints, then the procedure of incision, adjustment, and maintenance of coaptation by internal fixation measures, such as plates, nails, wire, staples, bands, and intrasosseous transplants, are demanded.

Interposition of soft tissues, where apparent perfect coaptation is present, frequently is not observed by X-ray, and prevents union and causes delayed union or non-union. Such a condition demands surgical intervention.

It has been recently observed by many surgeons that when fractures are dealt with by open operation there is delay in union, delay of callus formation, making the time for complete bony union from four to eight months instead of four to eight weeks.

Such delay of union is explained by disturbance of the nutrition at the ends of the fragments. Manipulation in the adjustment and coaptation separates the fragments from the bone and destroys the nutrient vessels of the coapted ends, as sometimes all the periosteum is denuded and the medulla lacerated. Macewen showed that the periosteum was a "limiting membrane" of bone and a carrier of nutrition to it by means of its vessels. Some authors claim that periosteum is a bone producer, while others prove that periosteum, deprived of its "cambium-bone-cells," will not produce bone when transplanted; that when bone is apparently reproduced from periosteum it is due to the presence of bone-cells on the inner surface of the cambium.

In some fractures open incision and adjustment only are necessary, as often by serrations and notched ends of fragments perfect coaptation is maintained without the use of plates or any other foreign material.

The most common fractures that seem to regularly demand open operation are:

Fractures of the upper thirds of the femur, patella, neck and trochanter of the femur, clavicle and fibula and tibia, olecranon, and Pott's fracture.

Compound fractures are best treated by open method after they become closed.

Simple fractures are best operated upon after "cofferdamming" has occurred — five to eight days after the fracture.

The conclusions are:

1. When plates are used they should be placed on the fleshy side of the limb.
2. Screws should fit snugly and hold the plate tightly to the bone, as any motion prevents union.
3. Some say that the necessity for removing a plate means faulty technique.
4. It is not always necessary to remove the plate when infection occurs.
5. Plating of bones does not always mean union, as bony union fails to occur sometimes even after intra-osseous transplants are used. These are "non-union" cases.
6. Shortening of the limb and limping always follow the plating of old or "ancient" fractures because of the necessary resection of the fragments.

O'Connor, J.: Fixation of Simple Fractures. *Ann. Surg.*, Phila., 1915, lxi, 88.

By Surg., Gynec. & Obst.

The author describes his treatment of fractures adopted during twenty-five years' hospital practice. He says the rapidity of union seems to be in direct ratio to the rapidity with which the severed parts are approximated, also that the cementing activity of the osteoblasts seems to decrease in direct ratio to the delay in which their services are utilized.

Considering the favors which Lister and Lane have conferred on bone surgery, the author ventures to state that it is unreasonable, knowing the handicap which the natural curative process has to carry in such cases, not to grasp the earliest opportunity of removing interposing "foreign bodies," and to effectively overcome displacements caused by powerful muscular traction.

Assisted by X-rays, the author treats simple transverse fractures by absolute rest on splints. If at the end of four weeks union is defective, he operates, removes interposing tissue, revivifies the surface of fragments, and plates. He uses Lane plates and Lane's technique and has never had any screws loosen or plates cause irritation. He lays great stress upon efficient approximation of divided periosteum over the plate, and also upon absolute rest for four weeks following the operation. He strongly condemns the use of massage or passive motion until firm union has taken place. The author's technique is described in detail in the article.

R. O. RITTER.

Gallie, W. E.: Bone Wedging: a Method of Eliminating the Introduction of Foreign Materials in Open Operations on Fractures. *Canad. M. Ass. J.*, 1915, v, 110.

By Surg., Gynec. & Obst.

The author describes a procedure for transverse and slightly oblique fractures of long bones, which is a modification of the ordinary inlay of bones. He saws out two wedge-shaped pieces and drives the longer wedge solidly into both fragments. He then drops the smaller wedge into the space left vacant by the larger wedge to assist in holding it in place.

JAMES O. WALLACE.

Albee, F. H.: Original Surgical Uses of Bone-Graft. *Penn. M. J.*, 1915, xviii, 333.

By Surg., Gynec. & Obst.

Albee tells of his experience with 250 cases in which he used autogenous bone-graft. He reviews the technique which he uses in Pott's disease. He describes the use of bone-graft for old united fractures and in some instances in fresh fractures. The method and results for employing bone-pegs for fracture of the neck of the femur and the uses made of bone-graft in paralytic and congenital club-foot are also described.

No light is thrown upon the solution of the question regarding the life of bone, its replacement by new bone-formation, or its action as a conducting scaffold. The author recommends that where possible the marrow substance of the graft be contacted with marrow of the recipient bone; endosteum with endosteum, and periosteum with periosteum. The belief that there is a positive need for bone-transplant in cases of Pott's disease, and some of the results obtained from the operation are set forth as follows: (1) The transplant gives protection to the anterior portions of the bodies. (2) It resists motion in the diseased bodies and places the parts in the most favorable condition for the restriction of the activities of the disease.

The technique given in this article is much the same as that described in many of the author's former articles. He, however, calls attention to the advisability of including the spinous processes of two vertebræ above and two below the diseased areas when operating in the dorsal region, and of including only one above and one below when operating in the lumbar region. No mention is made of the cervical region. He advises the use of a broad-blade osteotome, which prevents possible injury to the mural canal, which happens sometimes if the narrow chisel slides between the arches. Another advantage of the broad osteotome is that it allows more than one spinous process to be split at the same time, and thus a straight line is maintained for the gutter, which receives the transplant. He suggests that the transplant bed be not deeper than half an inch, and believes that the nearer the graft is placed to the tips of the spinous processes the greater will be the leverage on the individual vertebra. He calls attention to the fact that the supraspinous ligament is not cut across but simply split and is therefore not weakened; also that the short interspinous ligaments are not damaged for further support, and so no harm is done by the operation. The incision for the removal of the transplant is made over the anterior internal surface of the tibia, and includes periosteum, endosteum, and marrow.

In the after-treatment he avoids the use of plaster or braces, except in those cases where dorsal kyphosis with the bent graft exists. He employs the fracture bed for five to eight weeks, with the patient in a dorsal position, and gives as a convalescent period three to eight months. Prog-

nosis in all operated cases is most favorable for the relief of all symptoms, and for the increased deformity.

In the repair of old fractures by means of bone-graft, Albee makes the gutter with twin saws and shapes the bone-nails with the surgical lathe. The long graft is slid down from the shaft so as to bridge over the fracture and is held in place sometimes by slanting pegs; again by heavy kangaroo. He makes the gutter walls and the slide graft narrower at the bottom and wider at the surface, so that it becomes locked when it slides past the fracture in the lower portion of the groove.

Bone-pegs from the tibia are used for ununited fractures of the neck of the femur and are thought to be particularly valuable on account of the stimulation to osteogenetic activities.

In the correction of paralytic club-foot, the graft is placed between the astragalus and the scaphoid; in congenital club-foot, the scaphoid bone is split transversely in halves, and a small piece of bone from the tibia or from the cuboid is inserted between these halves. The author believes these operations are often permanently correct, and that the awkward flail condition is often overcome and the foot lengthened.

H. B. THOMAS.

Quain, E. P.: The Use of Indirect or External Fixation in the Open Treatment of Fractures. *J.-Lancet.*, 1915, xxxv, 1. By Surg., Gynec. & Obst.

The author condemns the indiscriminate use of Lane plates for various forms of fractures, as carried out by those unskilled in their application. He advocates a substitute in the form of indirect or external fixation by means of which the average surgeon may operate with considerable more assurance of success.

Bone-plating is not to be condemned when sufficiently indicated and properly performed; on the contrary, it should be exalted to the highest plane of surgery and practiced only by those specially skilled in its application.

Failure in bone-plating may be due to many causes, among which are: imperfect asepsis and infection of the wound; plates poorly applied to the fragments; improper tension of the screws, which may be either too tight or too loose; stripping of the periosteum; and rough treatment of the medullary canal in replacing the fragments and applying the plate.

Plates applied in compound fractures tend to increase the inflammatory complications and require removal sooner or later.

In applying indirect or external fixation of fractures the author advocates the methods of Lambotte and Freeman, and gives a detailed description of the appliance and the technique.

The advantages claimed for this method are: comparative ease and rapidity of application; minimum destruction of bone elements, and therefore reasonable safety and success; fixation is firm and permits early movements of the neighboring

joints; there is no metal in contact with the fracture line; no foreign body is left behind; in compound fractures it holds the fragments in place and at the same time allows drainage and dressing of the wound without pain to the patient.

ROBERT B. COFIELD.

Skilern, P. G., Jr.: Complete Fracture of the Lower Third of the Radius in Childhood, with Greenstick Fracture of the Ulna. *Ann. Surg.*, Phila., 1915, lxi, 209. By Surg., Gynec. & Obst.

The author has shown in this article a condition of a definite clinical entity. Although fracture of both bones of the forearm in childhood is common, the above variety is definite and occurs while the patient is in motion, as from a fall from a bicycle or while on roller skates. The fracture of the radius is low down with displacement of the fragment backward and outward; the ulna is bent with the concavity toward the radius with compression of the fibers of the ulna on the radial side, the inner fibers being torn asunder. The brunt of the vulnerating force is borne by the radius, resulting in complete fracture, while the incomplete fracture of the ulna is produced by tensile stress. This fracture is to childhood what Colles' fracture is to adults. Reduction is simple, perfect alignment of the inner border of the ulna being necessary to secure a good anatomical result. When the incomplete ulnar fracture is made complete, the displaced radius automatically reduces itself. Two splints, one a volar bond, the other a dorsal straight splint, are applied. Tables show that males fracture their arms four times as often as females, that one-third of the fractures of childhood occur in the lower third of the forearm, and that the radius is broken in 70 per cent of cases.

H. W. MALTBY.

Campbell, W. F.: Fracture of the Elbow in Childhood. *Med. Times*, 1915, xliii, 43.

By Surg., Gynec. & Obst.

The author reports a case of supracondylar fracture of the elbow in a child. Fracture should always be suspected in injuries of the elbow-joint. Careful examination under anæsthesia and adequate radiograms in two planes both before and after reduction are urged. Accurate reduction is essential for the best functional results. If ankylosis occurs it is due not to immobilizing but to faulty reduction. No special rules can be laid down either for reduction or retention, as each case presents special problems.

F. J. GAENSLEN.

Wight, J. S.: Fracture of the Lower End of the Humerus, with Displacement. *N. Y. M. J.*, 1915, ci, 294. By Surg., Gynec. & Obst.

In the osteology of the elbow-joint it is shown that the diaphysis has the greater osteogenetic power; if the epiphysis had the same power, fracture of it would result in ankylosis. The fact is that joints becoming ankylosed have had fractures into the

diaphysis, and to prevent this, all such must have the fragments accurately coapted. Two cases are cited. The first was an irreducible oblique fracture of the lower end of the left humerus. A posterior incision was made, and the fragment replaced. It refused to stay, so a Lane plate from the external condyle to the shaft was used to hold the lower fragment in place. The plate was removed under local anæsthesia in two weeks. Motion was begun in three and one-half weeks. At the end of six weeks there was a slight ankylosis which was broken up under an anæsthetic. Passive motion for two weeks longer resulted in a free joint. The second case had a transverse fracture which required open operation for reduction, but the fragment stayed and a good recovery resulted.

C. A. STONE.

Sturgis, M. G.: Fracture of the Tip of the Internal Condyle of the Femur. *Ann. Surg., Phila.*, 1915, lxi, 79. By Surg., Gynec. & Obst.

The report is an unusual case of foreign body in the knee-joint, which consisted of the fractured tip of the internal condyle of the femur. The patient experienced no disability for a period of six weeks following the accident until the knee suddenly "locked." The X-ray revealed the loose fragment in the suprapatellar fossa on the inner side. Operation was advised and the loose fragment was removed.

ROBERT B. COFIELD.

Lilienthal, H.: Infected Compound Fracture of the Femur into the Knee-Joint; Treatment by Conservative Surgery. *Am. J. Surg.*, 1915, xxix, 118. By Surg., Gynec. & Obst.

Lilienthal records the history of a child six years old who had sustained an open fracture of the femur into the left knee-joint. The child had been injured six weeks before she came under Lilienthal's care and had been treated for a while in a hospital but had been removed by the parents.

On admission the patient was apparently moribund. There was profuse suppuration about the knee-joint, a fracture of the internal condyle with extensive pocketing down the leg and up the thigh, deep ulcerations on the feet, and a bed-sore over the sacrum. A transverse incision was made across the front of the knee, severing all the soft tissues except a posterior flap containing the main vessels and nerves. The loose internal condyle was removed and the knee dressed at right angles, the large gap being filled with packing. The patient improved, and six weeks later an attempt was made to straighten the knee, an inch of the femur being removed. There was profuse discharge following this, and when the wounds healed the limb was in flexion at 160°. Eight months later the knee was operated on again and three months later firm ankylosis with a straight knee was present. From the description and accompanying photographs it would seem to be a remarkable case which it is impossible to do justice to in an abstract.

FRANK D. DICKSON.

Brickner, W. M.: Traumatic Forward Subluxation of the Shoulder. *Am. J. Surg.*, 1915, xxix, 51.

By Surg., Gynec. & Obst.

A review of the literature on the subject is given and the doubt and uncertainty of occurrence noted. It is shown that subluxation of the shoulder exists when the articulating surface of the humerus has not passed beyond the edge of the glenoid, but remains in contact (even in articulating contact) with the joint surface of the fibrocartilage attached to the glenoid margin. Three cases are cited, all of which had negative X-rays, but showed prominence of the humerus in front, a depression behind, and slight or no flattening of the deltoid, and were accompanied by pain in the joint and down the arm, with limitation of abduction. Rotation may be but slightly inhibited with this trouble. The author suggests that stereoscopy may demonstrate the condition.

H. W. MEYERDING.

Blanchard, W.: Structural Changes in Congenital Hip Dislocation. *Tr. Am. Orth. Ass.*, Detroit, 1915, May. By Surg., Gynec. & Obst.

The X-ray pictures of congenital hip dislocation in children taken before reduction show a breaking down and disappearance of the bony structures of the joints.

The X-ray pictures taken several years after reduction show a cartilaginous and bony reconstruction of both the head of the femur and the socket. A close observation of these changes in bone structure enables the surgeon to place the leg in the best possible position after reduction, so as to prevent a relapse and also to favor the rebuilding of a good hip-joint.

The leg must be held for eight months in a plaster of Paris splint to give time for the new hip-joint to form.

Two cases are cited to show that in cases of diphtheria or other illness the plaster of Paris splint may be laid aside for two months and if the patient remains in bed there will be little or no danger of a redislocation.

The elimination of unnecessary violence has marked every step forward in the reduction of congenital hip dislocation and highly satisfactory results are usually obtained.

SURGERY OF THE BONES, JOINTS, ETC.

Jost, O.: Osteoplastic Operations on the Extremities (Beiträge zur Osteoplastik an dem Extremitäten). *Beitr. z. klin. Chir.*, 1914, xcv, 86.

By Surg., Gynec. & Obst.

Jost gives brief extracts of 325 cases from the literature, 220 of which were autoplasmic operations, with good results in 66.8 per cent.

Streissler reports good results in 83 per cent of 191 cases, including both autoplasmic and homoplasmic operations, also operations on the skull, which is probably the reason for his better results. Of the operations 22.8 per cent in Jost's series were homo-

plastic, with good results in 46.9 per cent; 11.2 per cent were heteroplastic, with good results in 76 per cent.

The author describes in detail two cases which he operated upon. The first was in a child of 4, for sarcoma of the tibia; the second in a boy of 17, for a tumor of the tibia. In both cases the diseased segment of the tibia was removed and the defect filled with a piece resected from the sound part of the bone. The results were excellent in both cases.

In the first case there was a pseudo-arthritis of the knee-joint, probably due to the fact that the bone was wedged directly into the epiphyseal cartilage, thus destroying its function. In the second case the röntgen picture showed that there was new formation of bone from the epiphyseal cartilage. The irritation produced by the transplantation stimulated the cartilage growth, though it had remained completely inactive so long as this stimulation was lacking.

It has been found in many fields in physiology and surgery that an organ would respond to functional demands made on it. In this case the epiphyseal cartilage reacted with new bone formation.

There has been a great deal of discussion as to the effect of bone-transplantation on the function of the cartilage. Of course, this case is not decisive, for it is only a year and a half since it was treated. An examination after several years would be necessary to make a final decision as to permanent results.

In spite of the stiffness of the joint in the first case and a scarcely perceptible shortening of the limb, the result is brilliant as compared with the results of the former radical treatment for bone sarcoma. Recurrences and metastases, which are so much feared in the conservative treatment of these tumors, have not yet appeared 1 year and 9 months after the operation. Von Haberer says that the danger of recurrence is past after two years, so that the result in this case is apparently permanent.

The article is illustrated by six plates showing röntgen pictures of the two cases described, and a bibliography of 175 titles is appended. A. Goss.

Hanck: Permanent Results After Operative Mobilization of Joints (Zur Frage der Dauerresultate nach operativer Gelenkmobilisation). *Beitr. z. klin. Chir.*, 1915, xcv, 290. By Surg., Gynec. & Obst.

Hanck reports a case in which complete bony ankylosis of the elbow-joint was operated upon and free flaps of fascia interposed. The patient, a boy of 11, was examined four and one-half years afterward.

The wound healed aseptically, and 10 days later massage and active movements were begun. No mechanical after-treatment was given, but motion continued to improve. After a year motion was possible through 55 degrees. Now it has improved 20 degrees more. There is a slight abnormal rotation of the head of the radius, which does not seem to trouble the boy.

In the literature emphasis has been laid on the importance of widely separating the joint surfaces. This was not done in this case, and yet the result was excellent. This point is of importance because the wide separation of the joint-ends tends to produce flail-joint. Formerly the distance between the joint-ends attained what is now accomplished by the interposition of soft parts; therefore the interposition of a wide distance between the joint-ends is superfluous. Moreover, wide separation of the ends does not necessarily prevent recurrences.

A case is described of severe progressive ankylosis in almost all of the joints, including those of the spinal column. Operation was performed to mobilize the hip-joint with interposition. In spite of daily passive and active movements, the result was absolutely negative. This is the only case of the author's which was a failure. The reason, he thinks, was the insufficient removal of the periosteum. He believes that subperiosteal resection, as recommended by Langenbeck, is a mistake where it is desired to obtain a mobile joint, for the periosteum produces new bone formation and renewed ankylosis. Von Langenbeck's resection should be performed only when bony union is desired.

A. Goss.

Gallie, W. E.: Tendon-Fixation for Deformity Resulting from Partial Paralysis. *Ann. Surg.*, Phila., 1915, lxi, 94. By Surg., Gynec. & Obst.

Gallie reports one case as a further development of his "tendon-fixation" operation. The patient, a boy of five years, had a residual partial paralysis of the calf muscles and a complete paralysis of the tibialis posticus of the right side, following anterior poliomyelitis two years before. The anterior muscles of the leg were about normal. The result was a moderate calcaneovalgus, the patient walking on the heel with considerable valgus.

At operation the tendo achillis was exposed through its sheath and then split into an anterior and a posterior half from well up on the muscle to the os calcis. The upper end of the anterior half was then cut free from the muscle. Close to the insertion of the tendon a small opening was made in the anterior surface of the sheath and the cut end of the half-tendon drawn through so that it was entirely anterior to the sheath. In the posterior surface of the tibia a bed was prepared for this half-tendon as usual. When the half-tendon was drawn sufficiently taut to produce a moderate equinus it was sutured in place with kangaroo tendon and catgut and completely covered with periosteum. The peronei were transplanted to the os calcis and the posterior tibial buried in the internal malleus by the usual method. Plaster was worn for two months when the patient was able to strongly plantar flex the foot by the combined action of the calf muscles and the transplanted peronei, but dorsi flexion was impossible beyond a slight obtuse angle. The patient now walks almost normally with the aid of a Whitman plate.

R. O. RITTER.

ORTHOPEDICS IN GENERAL

Armour, R. G.: Diagnosis, Symptomatology, and Pathology of Poliomyelitis Anterior Acute. *Canad. J. M. & S.*, 1915, xxxvii, 47.

By Surg., Gynec. & Obst.

Acute anterior poliomyelitis must be considered a generalized infection, since pathological changes are found not only in the central nervous system but also in the liver, spleen, kidney, in Peyer's patches in the intestine, and in the mesenteric lymph-glands.

Suggestive points in diagnosis are pain on handling and tenderness of the muscles. Kernig's sign is present, and flexion of the neck elicits pain. The constitutional symptoms present are very much like those of the common ailments of children during the summer months. Paralysis should always be looked for in these cases.

The virus probably travels by way of the lymphatics, having gained entrance by way of the nasopharynx, the intestinal tract, or both. The virus produces its greatest effects on the gray matter of the central nervous system, through its influence on the blood-vessels and perivascular lymph-vessels of the brain and cord.

Congestion, œdema, minute hæmorrhages, and round-cell infiltration are found. Various types may be recognized: the meningeal, in which pain and rigidity are marked; occasional cases with sensory disturbances, in which the pathological changes are most marked about the posterior cornua; others with pyramidal tract involvement associated with spasticity; still others are of the Landry ascending type, while Oppenheim's disease, or amyotonia congenita, is also considered by some to be a type of poliomyelitis. The condition is readily differentiated from rickets, post-diphtheritic paralysis, nephritis, and tuberculous meningitis by the suddenness of onset, the presence of gastro-intestinal disturbances, localized paralysis, and the condition of the reflexes.

F. J. GAENSLEN.

Howland, G. W.: The Medical Treatment of Anterior Poliomyelitis. *Canad. J. M. & S.*, 1915, xxxvii, 52.

By Surg., Gynec. & Obst.

Howland emphasizes the need for greater care in the prevention of the spread of the disease by the use of (1) dilute hydrogen peroxide or 5 per cent menthol nasal irrigation for those exposed; (2) disinfection of the patient's stools and urine; and (3) isolation of the patient for six weeks and of other members of the household for three weeks.

Urotropin probably has little effect after the infection has occurred. Elimination of the toxic products should be promoted by daily purgation and frequent warm baths. For the relief of pain aspirin and salicylates are useful. During the convalescent stage supportive treatment and rest are necessary. In the paralytic stage intelligent massage and active movements, preferably in the warm bath, are advised.

F. J. GAENSLEN.

Jones, S. F.: Prophylaxis and Orthopedic Management of Anterior Poliomyelitis. *Colo. Med.*, 1915, xii, 56.

By Surg., Gynec. & Obst.

After recognizing the various manifestations of anterior poliomyelitis, as the abortive, spinal, bulbar, cerebral, ataxic, polyneuritic, and meningitic types, and that type simulating Landry's disease, Jones describes the three stages of infantile paralysis as (1) the acute infective stage; (2) the subacute non-infective stage, which shows no fever but still some tenderness and the full establishment of the paralysis; and (3) the convalescent stage.

The orthopedic management includes for the first stage rest in bed and proper hygiene with a light diet and thorough elimination. In the second stage no massage or electricity should be used until the tenderness is gone, but developing deformities must be prevented by splints, etc. Treatment of the third stage includes competent massage, faradic and galvanic electricity, corrective braces and supports, and, lastly, the operative measures of transplantations, arthrodeses, silk ligaments, bone removal, tenotomies, and osteotomies.

Prophylaxis should include complete isolation and quarantine in the first stage, the giving of urotropin to exposed persons, antiseptic throat sprays, and careful disposition of the patient's excretions and secretions. This quarantine should last from eight to sixteen weeks.

R. G. PACKARD.

Black, K.: Dupuytren's Contraction. *Brit. M. J.*, 1915, i, 326.

By Surg., Gynec. & Obst.

Black very ably discusses this condition. Sir Astley Cooper was the first to describe the disease, but Dupuytren in 1831 first dissected a case, revealing the fact that the contraction is due to palmar fascia contraction and not to tendon contraction. It is a fibrositis of the palmar fascia without skin inflammation. The digital processes of the palmar fascia are first involved, gradually the whole fascia becoming involved. The fingers become more or less flexed into the palm of the hand. So great may be the contraction that the interphalangeal joints may be dislocated.

Microscopically the lesion shows fibrous strands intermingled with cellular infiltration, showing a plastic inflammation.

The disease is divided into four stages as follows:

1. That in which the palmar fascia only is involved.
2. That in which the palmar fascia is involved and one or more digits are slightly flexed.
3. That in which the palmar fascia is involved and one or more digits are semiflexed.
4. That in which the palmar fascia is involved and one or more digits are totally flexed.

The disease may be very rapid or may last for years. When unilateral the right hand is more often involved. The disease occurs more frequently in men than in women, more often in adults and the aged, and there is a hereditary tendency, the disease

having often been found to run through families. According to Black's statistics the working class is not so apt to have the disease as the leisure class.

The cause of the disease has been a matter of discussion for some time, some believing it to be due to some external agent acting traumatically on the hand, while some believe it to be due to some systemic or constitutional factor, such as rheumatism and gout.

Black proves by his statistics that the cause must come from within the system.

The treatment of Dupuytren's contraction is both operative and non-operative. The non-operative treatment is suitable only for slightly affected individuals. They should wear a splint at night to keep the finger in hyperextension, together with extension, massage, manipulation, hot water, and the Bier treatment.

The operative treatment consists of two methods: the open and the subcutaneous.

In the open method the flaps are dissected from the palmar fascia; the fascia is excised, the wound is closed, and a well-padded splint is applied to keep the fingers straight.

The subcutaneous operation is simply the cutting of the fascia with a fine tenotomy knife. The knife is inserted between the skin and the tense fascia. Six or ten punctures may be necessary to cut all resisting bands of fascia. A proper splint is worn until the fingers are straight, and at night for several months.

J. H. SHAW.

Owen, W. B.: Weak Feet. *Surg., Gynec. & Obst.*, 1915, xx, 213. By Surg., Gynec. & Obst.

Weak feet in the majority of instances are the result of ultra-civilization. We are taught to turn our toes out and to wear stylish shoes, shoes that suit the eye and not the feet. The Indian rarely has weak feet because he walks with his feet parallel, which is the normal attitude. The shoe is worn for protection to the sole and should not support the foot and retard muscular function.

The most reliable diagnostic points are abduction, inability to dorsoflex the foot, with the history of pain on prolonged standing or walking, which is relieved by rest. Abduction is the position of weakness. Slight adduction is the position of strength.

All cases should be overcorrected, the heel cord stretched, and the foot forced to remain in slight adduction. All rigid feet should be thoroughly stretched and placed in the position of overcorrection under anæsthesia.

Weak feet can be cured by shifting the body weight from the inner aspect to the outer border of the foot and by muscular development by active motion.

All mechanical support should be removed when muscular development is sufficient to bear the burden and the corrective attitude has become habitual.

Meisenbach, R.: The Painful Anterior Arch of the Foot; an Operation for Its Relief by Means of Raising the Arch. *Tr. Am. Orth. Ass.*, Detroit, 1915, May. By Surg., Gynec. & Obst.

There are two types of painful anterior arch of the foot which are commonly met with, the flexible and the rigid. The flexible gives intermittent symptoms of pain, which may be localized in the anterior arch or in the foot and leg. In this type usually there are no calluses and the toes are straight. This type has in the past yielded to the treatment consisting of exercises, shoes, or plates.

In the rigid type of anterior arch of the foot, which is the topic under consideration in Meisenbach's paper, the symptoms are chiefly localized to the anterior arch of the foot and the toes. The arch is rigid, bound down by ligamentous and peri-articular thickening, and frequently the second, third, and fourth metatarsal joints are below the level of the first and fifth, causing a reversed rather than a high anterior arch. In this type of foot the toes are usually permanently flexed, with deep-seated calluses on the toes and on the plantar surface of the foot, so that when the patient walks there is considerable pain, sometimes to such a degree as to impair the general health. The calluses are deep-seated, some almost one-quarter of an inch thick, and extend deeply into the open metatarsophalangeal joints of the flexed toes. The treatment heretofore afforded these patients has been only of a temporary and symptomatic nature.

The author's operation consists in elevating the second, third, and fourth metatarsophalangeal joints by means of osteotomies, which are performed subcutaneously and subperiosteally through the second, third, and fourth metatarsal shafts, about 3 cm. from the metatarsophalangeal joints. The operation gives immediate relief, the calluses disappear, the toes straighten, and a permanent high anterior arch is secured. The metacarpophalangeal joints are not interfered with and are not resected, as has been the custom in previous operations for this condition. The result is a flexible foot, with little or no deformity.

The patient presented at the meeting had been treated by different methods over a period of eight months, with only temporary relief until the operation had been performed.

Campbell, W. C.: Subperiosteal Osteotomy of the Os Calcis for Pes Calcaneus. *Surg., Gynec. & Obst.*, 1915, xx, 231. By Surg., Gynec. & Obst.

Calcaneus, the result of poliomyelitis, not associated with varus or valgus, may be materially improved by the resection of a wedge of bone from the os calcis posterior to the facets for articulation with the astragalus; after which the posterior fragment is forced backward and upward approximating bony surfaces. The tendon of the peroneus longus is transferred to the bone anterior to the insertion of the tendo achillis. A plaster cast holds the foot in marked equinus for six weeks, when it is removed

and the heel of the shoe elevated, no apparatus being necessary except the wearing of a splint at night.

The normal contour of the heel is restored; the foot is actually elongated; weight-bearing is more properly distributed, the cavus is obliterated, and the tendo achillis, which is always weak or paralyzed in calcaneus, is reinforced by the tendon of the peroneus longus.

When peroneal or tibial paralysis is associated, other procedures are preferable.

Mathews, W. P.: The Early Treatment of Congenital Club-Foot. *Virg. M. Semi-Month.*, 1915, xix, 604.
By Surg., Gynec. & Obst.

The author briefly describes the pathology of this condition and makes a plea for early treatment of congenital club-foot. He states that a baby grows more rapidly the first year, and believes that the foot deformity should be corrected during this time.

Weight-bearing during this time does not have to be considered and all the foot structures are soft and yielding. He divides his cases into those of the first degree, where the deformity can be reduced into nearly normal position without pain, and those of the second degree, where foot deformity cannot be reduced without great force and resultant severe pain.

The following methods have yielded the best results in the author's work.

In the treatment of very mild cases of the first degree, the mother or nurse is taught how to correct the deformity with pressure on the front of the foot, reducing the varus deformity, and keeping the foot in this position ten or fifteen minutes several times daily. Massage of the leg-muscles is practiced along with this treatment. Where the mother or nurse cannot do this successfully the

foot is covered with several layers of flannel bandages, the foot gently forced into the best possible position, a pasteboard sole held on the bottom of the foot, and all covered by adhesive plaster and oil silk. This process is repeated weekly until the foot retains a corrected position, and then every two or three weeks until the child begins to walk.

Some of the cases of the second degree can be greatly benefited by the above methods; but in resistant cases radical measures are necessary. The Lorenz method, fasciotomy, and tenotomy are all used. Functional rectification must be complete before the child is allowed to walk. Mathews believes the operations should be performed when the children are only two or three months old.

A combination of mechanical and operative measures is the common mode of treatment in vogue today, and if perseveringly and scientifically carried out, he believes will always result in a cure.

C. C. CHATTERTON.

Dalton, A. J.: Wire Splint in the Early Treatment of Congenital Club-Foot. *Surg., Gynec. & Obst.*, 1915, xx, 233.
By Surg., Gynec. & Obst.

The author has devised a splint made from No. 8 galvanized wire so bent as to overcome and over-correct the inversion and equinus. The angles which overcome the inversion and equinus are at 90° at first application, the angle for inversion being increased at subsequent applications while that for the equinus is lessened at each succeeding treatment.

The following claims are made for the splint: The skin can be inspected every few days. There is marked leverage to overcome the deformity of both the varus and equinus. There is practically no tendency to necrosis. It is light and comfortable.

SURGERY OF THE SPINAL COLUMN AND CORD

Erenfeld, H. M.: Spina Bifida with Myelomeningocele; Removal of Myelomeningocele and Closure of Spinal Cleft by Transplantation of Animal Bone. *J.-Lancet*, 1915, xxxv, 8.
By Surg., Gynec. & Obst.

The author discusses spina bifida in general and describes the case of an eight-month-old baby with spina bifida with a tumor in the lumbar region which he removed. The cleft in the spine was partially closed by a piece of bone from a rabbit. The transplant became well incorporated and the child made a good recovery. The necessity of such a transplant, however, is not made evident. J. W. SEVER.

Volkman, J.: Primary Acute and Subacute Osteomyelitis of the Spinal Column (Über die primäre und subakute Osteomyelitis purulenta der Wirbel). *Deutsche Ztschr. f. Chir.*, 1915, cxxxii, 444.
By Surg., Gynec. & Obst.

Volkman has collected 83 cases of primary osteomyelitis of the spinal column from the literature and

4 of his own. Sixty-eight per cent of the cases were found to be due to staphylococcus pyogenes aureus. It could not always be determined how the bacteria entered the body, but in about one-fourth of the cases there was furuncle, carbuncle, small abscess, felon, pediculosis, acne, or slight injuries. In a considerable number of cases there was a history of trauma. Trauma may rupture an old encapsulated focus and thus produce a general infection.

Weichselbaum and Fränkel have shown that in general diseases micro-organisms, such as pneumococci and gonococci, may be deposited in the spinal column. Twelve authors say that no direct cause of the disease can be found. The majority of cases occur in the second decade of life.

The disease may be primary in the periosteum or in the bone-marrow. In the periosteal form the periosteum is hyperæmic, inflamed, œdematous, and infiltrated with round cells. There are often hæmorrhages and later small foci of suppuration. The pus finally separates the periosteum from the bone.

If it begins in the marrow, the marrow becomes hyperæmic and shows hæmorrhages. The color is at first intense red and later almost black. The marrow is infiltrated with cells and is under high pressure. In most cases there is suppurative infiltration and finally liquefaction of the marrow.

The disease involves the arches in 58 per cent of the cases, the bodies in 34 per cent, and both in 7 per cent. It is most frequent in the lumbar column but most dangerous in the cervical segment, because of the possibility of involving the brain. In disease of the thoracic column the abscess may rupture into the pleura. Abscess in the lumbar cord may either rupture externally or extend downward, forming a psoas abscess. Gibbosity and scoliosis may occur in any part of the spinal column.

Sixty-eight per cent of the cases were acute, 18 per cent subacute. Exact information as to the character is not given in the other cases. Severe general symptoms dominate the clinical picture. They may begin very violently with high fever, 41° or more, albumin in the urine, occasionally icterus, rapid pulse with extremely severe headache, sometimes chills and vomiting. Sometimes the patient passes immediately into delirium and coma and dies without diagnosis being made; but sometimes the onset is more gradual, with pain in the back and pelvis radiating toward the extremities, and finally the pain becomes localized in a certain segment of the spinal cord. Certain vertebræ or their processes may be sensitive on palpation. Bending or turning the body may produce pain. Before the abscess is formed there is swelling and œdema of the soft parts and perhaps swelling of the local lymph-glands. If the pus ruptures into the spinal canal, there may be severe nervous complications. Pressure of the cerebrospinal fluid may rise to 250 mm.; the color is normal or slightly turbid. The cell content is generally increased, the increase being chiefly in the polynuclear neutrophile leukocytes. In one case of Göbell's, staphylococcus pyogenes aureus could be cultivated from the cerebrospinal fluid.

Correct diagnosis was made before death in only about one-third of the cases. Volkmann thinks this is due not only to the rarity of the disease, but to the lack of definite and characteristic symptoms. In addition to the points mentioned under symptomatology, blood and urine examinations should be made. The leukocyte count is greatly increased and

it may be possible to cultivate staphylococci from the blood or urine.

Röntgen examination may be helpful, but often is not. Among the mistaken diagnoses made were:

	No. Cases
Typhus abdominalis.....	4
Spondylitis tuberculosa.....	4
Epidemic cerebrospinal meningitis.....	3
Pneumonia.....	3
Rheumatism.....	3
Influenza.....	1
General sepsis.....	1
Inflammation of lymph-glands.....	1
Torticollis.....	1
Acute myelitis.....	1
Landry's paralysis.....	1
Subphrenic paranephritic or lumbar abscess.....	1
Kidney colic with lumbar neuralgia.....	1
Peritonitis.....	1
Appendicitis.....	1

Differential diagnosis from these various diseases is discussed.

The mortality at present is 41.8 per cent, which is a great improvement as compared with the 71.4 per cent mortality given in 1896 by Makins and Abbott. In cases where early diagnosis was made and operation performed at once the mortality was reduced to 16 per cent. The mortality is much higher in osteomyelitis of the cervical column than of the thoracic or lumbar regions. The mortality is greatly increased if the spinal cord becomes involved.

Treatment is operative. If the disease is periosteal, the abscess may be simply drained. If the marrow is involved, the bone must be curetted. If the bodies are involved too much, bone must not be removed or gibbosity will be produced. If the disease involves only the arches or transverse or spinous processes, thorough resection may be performed without any harm. The wound should be irrigated with physiological salt solution rather than with an antiseptic solution. Occasionally simple puncture is sufficient. If the pus has entered the spinal canal and there are nervous symptoms, laminectomy is indicated. If there is psoas abscess, it should be freely opened, not merely punctured as in tuberculous disease. Two authors gave a combination of serum treatment with surgery, but Volkmann thinks their success was due to the operation rather than the serum treatment.

A bibliography of 102 titles follows the text of the article.

A. Goss.

SURGERY OF THE NERVOUS SYSTEM

Leszynsky, W. M.: Further Observations on the Treatment of Sciatica by Perineural Infiltration with Physiological Saline Solution. *Med. Rec.*, 1915, lxxvii, 211. By Surg., Gynec. & Obst.

Since his last report, in 1912, the author has adopted this procedure in 135 additional cases. The number of injections required for the individual

case varied from 1 to 6, but averaged 3 injections for each patient; about 480 injections were given in 160 cases.

In the 160 cases reported, there was no evidence of joint or pelvic involvement, and the correctness of the diagnosis was beyond doubt. The fact that many of these patients were rapidly and perma-

nently cured by a single injection in the neighborhood of the painful sciatic nerve is ample evidence of the affection being limited to that circumscribed area.

Complications or unpleasant symptoms have never been encountered. Under proper technique and strict asepsis it is a harmless operation. As a result of this larger experience, the author reiterates the statement made nearly three years ago that perineural infiltration of normal saline solution at the sciatic nerve, when properly performed, proves a valuable acquisition in relieving the pain of sciatica, whether acute or chronic.

Several patients have not reacted satisfactorily, or have not given the plan an adequate trial, but they have been the exceptions. From 1 to 6 injections are required to secure permanent relief, although in numerous instances 1 or 2 injections have sufficed. This treatment is not recommended in every case, for many patients are often relieved and recover under the customary therapeutic procedures. In subacute and chronic intractable cases, however, it has proved the most satisfactory addition to therapeutic armamentarium that has yet been devised. While this method has been cursorily mentioned by several writers within the last few years, it has not received the recognition that its importance demands. Constitutional treatment must not be neglected, and after relief is obtained from the injections it is often necessary to utilize supplementary measures in order to prevent a recurrence.

As a rule, the injection of saline solution under pressure in quantities ranging from 60 to 120 ccm. or more is attended with comparatively slight pain. This usually arises during the early period of the injection. As soon as heaviness and numbness in the extremity are felt no further pain results from the introduction of additional fluid. In the majority of instances the treatment is not painful. At the time of the first injection, fear and apprehension

often render some patients less manageable than others. Usually, when additional injections are required, these elements of discomfort have become eliminated and there is no further difficulty. It should be borne in mind that the object is to produce infiltration of the nerve and the surrounding structures. It is not intended that the nerve-sheath should be entered by the needle. Should such a large quantity of fluid be forced into the trunk of the nerve, disagreeable consequences, such as paralysis and traumatic neuritis, would probably ensue. In the construction and use of the special needle, precautions are taken to avoid puncturing a blood-vessel or the nerve-sheath.

EDWARD L. CORNELL.

Weible, R. E.: Neuroplasty of the Median and Ulnar Nerves. *J. Lancet*, 1915, xxxv, 68.

By Surg., Gynec. & Obst.

The patient was injured by being thrown in front of the sickle of a mowing machine. The knives quickly ground up the inner surface of the upper right arm, destroying the brachial artery and vein and the median and ulnar nerves. Any attempt to use the hand resulted in extension of the hand on the wrist with the fingers in a semiflexed position.

At operation, four months after the injury, the scar tissue was dissected out and the nerve-stumps well mobilized. There was a gap of about 13 cm. between the distal and proximal portions of the two nerves. Neuroplasty was done, a flap from both the distal and proximal portions of each nerve being used, and each nerve buried separately in the muscles.

The results came very slowly, but at the last examination the ulnar nerve showed complete regeneration and the median nearly so.

The author strongly recommends neuroplasty as the method of choice when there is much destruction of nerve tissue.

SURGERY OF THE SKIN, FASCIA, AND APPENDAGES

Freeman, L.: The Prevention of False Keloids in Scars by the Underlining of Incisions with Strips of Fascia Lata. *Colo. Med.*, 1915, xii, 79.
By Surg., Gynec. & Obst.

One of the disagreeable features which may follow a surgical operation and detract from an otherwise satisfactory result is hypertrophy of the cicatrix—a so-called “false keloid.” The scar becomes thick, elevated, and red, and if in an exposed position it is a source of mortification to the surgeon and patient. The hypertrophy seems mainly due to tension upon the scar; hence it is seen in connection with longitudinal rather than with cross incisions. Wounds about the neck, the abdomen, or the joints, which run at right angles to the line of normal tension, are seldom if ever followed by much hypertrophy, while those parallel to the line of tension are

frequently affected, as may be observed in the axilla after operations for cancer of the breast and about the neck following various surgical procedures. Hypertrophy is particularly apt to occur in tubercular patients, owing, perhaps, to substances circulating in the blood or present in the skin which predispose to the excessive formation of fibrous tissue.

The author employed fascia lata in two cases for the relief of this deformity. After thoroughly extirpating the scar and undermining the edges of the wound, the fascia lata was spread lengthwise beneath the incision. It was then fastened to the under surface of the skin and fascia on one side and to the deeper tissues on the other side with a few sutures of fine catgut, thus permitting union without danger of displacement.

EDWARD L. CORNELL.

MISCELLANEOUS

CLINICAL ENTITIES — TUMORS, ULCERS, ABSCESSSES, ETC.

Loeb, L.: The Influence of Changes in the Chemical Environment on the Life and Growth of Tissues. *J. Am. M. Ass.*, 1915, lxiv, 726.

By Surg., Gynec. & Obst.

Loeb reports his conclusions in regard to the influences of changes in the chemical environment on the life and growth of tissue based upon the surface and subcutaneous transplantation of various kinds of skin, and on the subcutaneous transplantation of the kidney, thyroid, uterus, and testicle.

In tumors and normal organs, autotransplants remain alive and may grow, while after homotransplantation they perish. In certain tumors and perhaps in normal tissue, even after homotransplantation, the transplanted cells may remain alive and in some cases grow. In some of these tissues which remain alive, metabolic changes are present representing a deviation from the normal.

Different tissues show a somewhat different degree of resistance after homotransplantation. There exists also a difference in individual experiments, depending perhaps upon a better mutual adaptation of the organ of one individual to the body fluids of another individual of the same species.

While the viability of homotransplants may not have been essentially impaired — and they may even grow — the metabolic changes they may have undergone do not interfere with their power to live and even propagate. These metabolic changes lead to a new condition in the host's tissues which secondarily brings about the destruction of the transplant by an increased activity on the part of the small mononuclear cells and a destructive activity on the part of the connective tissue of the host in such a manner that cirrhosis results, and a partial or complete destruction of the parenchyma occurs.

D. L. DESPARD.

Robertson, T. B., and Burnett, T. C.: The Influence of the Anterior Lobe of the Pituitary Body upon the Growth of Carcinomata. *J. Exp. Med.*, 1915, xxi, 280.

By Surg., Gynec. & Obst.

In consequence of the frequently observed correlation between abnormal disturbances of the growth process and pathological conditions in the pituitary body, many investigations have recently been carried out with a view of ascertaining the effect of administrations of the pituitary body or portions thereof upon the time relations and absolute magnitude of normal growth. Especial interest attaches to experiments upon the effects of the anterior lobe upon the growth of young animals,

since in cases of acromegaly and gigantism anterior lobe hyperplasia is frequently observed.

It appeared to the authors to be of interest to determine the effects of the administration of the anterior lobe upon the growth of carcinomata, both on account of the possibility held out by such an investigation of further confirming and elucidating the relationship of this gland to growth, and also on account of the information which might thus be derived regarding the relationship of carcinomatous to normal growth.

They propagated the Flexner-Jobling carcinoma by inoculation into the axillary region through two generations. The percentage of cases which took was high, varying between 60 and 80 per cent. Half-grown or adult animals were employed to propagate the tumors in the experiments which they enumerate. Their conclusions are as follows:

1. The administration of emulsions of the anterior lobe of the ox pituitary increases very markedly the rate of growth of the primary tumor in rats inoculated with carcinoma. The growth of small tumors is accelerated relatively more than that of large tumors.

2. This acceleration is only evidenced, however, at a certain stage in the growth of the tumor, subsequent to the twentieth day succeeding inoculation. The administrations do not enhance the tendency of the tumors to metastasize.

3. Liver emulsion does not cause an acceleration of the growth of carcinoma in rats.

GEORGE E. BEILBY.

Risley, E. H.: Diabetes and Surgery. *Boston M. & S. J.*, 1915, clxxii, 90. By Surg., Gynec. & Obst.

The author discusses what type of cases must be avoided, the probable mortality, and the prognostic value of the amount of sugar, basing his conclusions upon the classification of Smith and Durham.

The first class, in which glycosuria is the result of the surgical lesion, is not uncommon and has been reported as clearing up following operations for appendicitis, pyosalpinx, strangulated hernia, ovarian tumors, traumatic gangrene, etc. In these cases surgery is indicated and demanded.

The second class includes those cases in which glycosuria causes the surgical condition. Phillips is quoted as saying that probably only balanoposthitis and cataract are directly caused by diabetes. The high mortality in conditions which may be the result of diabetes, such as gangrene or carbuncle, has been greatly lowered by the use of the less toxic forms of anæsthesia.

Dietary treatment before operation is of great importance, there being a difference in mortality in favor of careful preliminary treatment of 18.66 per cent.

The following conclusions are presented:

The mortality in this class of cases is from 20 to 30 per cent, which is not high when the poor condition of some of the patients is considered.

A glycosuria should not deter the performance of any emergency operation, but other cases should not be treated in which acetone, diacetic acid, and ammonia cannot be reduced by preliminary treatment. The percentage of sugar is no criterion, as fatal results have followed when sugar was temporarily absent.

E. K. ARMSTRONG.

Crile, G. W.: The Kinetic System. *J. Mich. St. M. Soc.*, 1915, xiv, 75. By Surg., Gynec. & Obst.

The author formulates a theory which he hopes will harmonize a large number of clinical and experimental data, supply an interpretation of certain diseases, and show by what means many diverse causes produce the same end-results.

Even should the theory ultimately prove to be true, it will, meantime, be subjected to many alterations. The specialized laboratory worker will fail at first to see the broader clinical view, and the trained clinician may hesitate to accept the laboratory findings.

The kinetic system is a system within the body evolved primarily for the transformation of latent energy into motion and into heat. It does not directly circulate the blood; nor does it exchange oxygen and carbon dioxide; nor does it perform the functions of digestion, urinary elimination, and procreation; but, though the kinetic system does not directly perform these functions, it does play indirectly an important rôle in each, just as the kinetic system itself is aided indirectly by the other systems.

The principal organs which comprise the kinetic system are the brain, the thyroid, the suprarenals, the liver, and the muscles. The brain is the great central battery which drives the body; the thyroid governs the conditions favoring tissue oxidation; the suprarenals govern immediate oxidation processes; the liver fabricates and stores glycogen; and the muscles are the great converters of latent energy into heat and motion.

Adrenalin alone, thyroid extract alone, brain activity alone, and muscular activity alone are capable of causing the body temperature to rise above the normal. The functional activity of no other gland of the body alone and the secretion of no other gland alone can cause a comparable rise in body temperature; that is, neither increased functional activity nor any active principle derived from the kidney, the liver, the stomach, the pancreas, the hypophysis, the parathyroid, the spleen, the intestines, the thymus, the lymphatic glands, or the bones can, *per se*, cause a rise in the general body temperature comparable to the rise that may be caused by the activity of the brain or the muscles, or by the injection of adrenalin or thyroid extract. Then, too, when the brain, the thyroid, the suprarenals, the liver, or the muscles are eliminated, the power of the body to convert latent into kinetic energy is impaired or lost.

Crile offers evidence tending to show that an excess of either internal or external environmental stimuli may modify one of more organs of the kinetic system and that this modification may cause certain diseases. For example, alterations in the efficiency of the cerebral link may yield neurasthenia, mania, dementia; of the thyroid link, Graves' disease, myxœdema; of the suprarenal link, Addison's disease, cardiovascular disease.

The amount of latent energy which may be converted into kinetic energy for adaptive ends varies in different species, in individuals of the same species, in the same individual in different seasons, in the life cycle of growth, reproduction, and decay, in the waking and sleeping hours, in disease, and in activity.

After entering into a detailed discussion of the function, experimental work, and effects of disease on the various organs of the kinetic system, Crile comes to the following conclusions:

To become adapted to their environment, animals are transformers of energy. This adaptation to environment is made by means of a system of organs evolved for the purpose of converting potential energy into heat and motion. The principal organs and tissues of this system are the brain, the suprarenals, the thyroid, the muscles, and the liver. Each is a vital link, each plays its particular rôle, and one cannot compensate for the other. A change in any link of the kinetic chain modifies proportionately the entire kinetic system, which is no stronger than its weakest link.

In this conception we find a possible explanation of many diseases, one which may point the way to new and more effective therapeutic measures than those now at our command. EDWARD L. CORNELL.

BLOOD

Pupovac, D.: Arteriotomy in Embolism (Ein Beitrag zur Arteriotomie bei Embolie). *Wien. klin. Wchschr.*, 1915, xxviii, 90.

By Surg., Gynec. & Obst.

Operative opening of the arteries is indicated in embolism only if severe disturbances in nutrition are threatened by leaving the embolus. Pupovac has collected 10 cases from the literature, in which arteriotomy was performed. Two of these were completely successful. He describes a case of his own in a young man of 25.

On the 24th of June he opened the right femoral artery just at the point where the deep femoral is given off. He removed an embolus and sutured the artery. On July 15th it was necessary to perform the same operation on the left side. The patient died a few weeks later of hæmorrhagic nephritis and endocarditis, so that it was possible to make a post-mortem examination of the sutured arteries. Macroscopically the arteries were perfectly normal; microscopically the examination showed a slight thickening of the intima.

The ideal method is eversion of the wound edges

and adaptation of the intima to the intima, but Pupovac does not consider this absolutely essential, for in one place where perfect adaptation was not attained, there was, nevertheless, a complete restoration of the vessel wall. The most important point in the suturing of the vessel is the use of extremely fine silk and very small needles. Matti advocates the use of ordinary intestinal silk and needles in emergency cases, but the fact that there was secondary thrombosis of the femoral in his case contra-indicates this.

An important point in prognosis is to operate as quickly as possible after the formation of the embolus. Pupovac's first operation was performed 16 hours, the second 5 hours, after thrombosis occurred. On the right side the post-mortem examination showed thrombosis of the deep femoral, proving that all the thrombotic masses had not been removed; on the left side the extraction had been complete.

The age of the patient is also important in the prognosis. If changes have already occurred in the vessel walls, new thrombi are apt to form at the point of operation. A. Goss.

BLOOD AND LYMPH VESSELS

Buerger, L.: Concerning Vasomotor and Trophic Disturbances of the Upper Extremities, with Particular Reference to Thrombo-Angiitis Obliterans. *Am. J. M. Sc.*, 1915, cxlix, 210.

By Surg., Gynec. & Obst.

Buerger points out that it is not generally known to clinicians that certain well-recognized vasomotor and trophic disturbances of the extremities may, on the one hand, be the clinical manifestations of occluded vessels, and, on the other hand, be associated with arteries and veins that are organically intact. To the latter group belong those interesting symptom-complexes which have been described under the name of Raynaud's disease, erythromelalgia and acroparæsthesia, multiple neurotic gangrene, scleroderma, sclerodactyly, and chronic acroasphyxia. It is conceded that all these have one feature in common; i.e., that the arteries and veins have suffered no organic alteration in their patency. Comparatively little, however, has been written to show that there is a distinct clinical and pathological entity, thrombo-angiitis obliterans, with which there may be associated clinical manifestations almost identical with those that belong to these other diseases.

A clinical study of 200 cases of thrombo-angiitis obliterans during the last eight years (1906 to 1914) enabled Buerger to watch the course of this remarkable disease through all its clinical stages. Many of the cases were followed from five to eight years, and the presence of interesting mutations in the symptomatology was recorded. It was found that in a certain number of the patients the upper extremities were involved, although it is usually believed that only the lower extremities are affected.

It was seen that thrombo-angiitis may, by virtue of the predominance of certain objective phenomena, masquerade as almost any of the true vasomotor and trophic diseases.

Buerger's survey of the histories discloses that the upper extremities may be clinically involved in the following ways: (1) without subjective symptoms; (2) with vasomotor symptoms predominating; (3) with trophic disturbances alone; (4) with gangrene of slight extent; (5) with extensive gangrene threatening the viability of the extremity; (6) with extensive atrophy of the hand and forearm; and (7) with changes simulating scleroderma and sclerodactyly.

From his study Buerger is able to lay down certain facts as of some value in differentiating thrombo-angiitis obliterans from the true vasomotor and trophic diseases of the extremities.

For the clinical diagnosis of thrombo-angiitis we must depend upon (1) the racial (Hebrew) and sex (male) predilection; (2) the early involvement of the lower extremities; (3) the early symptoms of pain or intermittent claudication; (4) the presence of migrating phlebitis; (5) the evidences of pulseless vessels; (6) the presence of blanching of the extremity in the elevated position; (7) the existence of rubor in the dependent position; (8) the relation of the hyperæmic phenomena to posture; (9) the absence of simultaneous symmetrical involvement; and (10) the slow, progressive chronic course terminating in gangrene.

In Raynaud's disease we will note the following features: a sudden onset of the first stage of local syncope or regional ischæmia involving usually the fingers, more rarely the toes, and occasionally the margins of the ears or the tip of the nose with coldness and blanching; associated sensory phenomena, paræsthesia and pain; a comparatively short duration of the vasomotor and sensory manifestations, their intermittent character with return to normal between the attacks; the symptoms of local asphyxia attended with local depression of temperature and swelling of the parts involved; the disappearance of the asphyxia with substitution of reactive hyperæmia and a third stage of dry gangrene. Characteristic of this disease as well as of the cases of scleroderma and sclerodactyly is the striking atrophy of the ends of the distal phalanges. The changes in the bones can be well demonstrated by röntgen-ray examination, atrophy, and disappearance of large portions of the end-phalanges being distinctive and diagnostic features.

The differentiation of true scleroderma from thrombo-angiitis is rarely difficult to make. In scleroderma and sclerodactyly the first stage with hard œdema is characteristic and never simulated by cases of organic vascular disease. The second indurative stage may, however, be almost exactly reproduced by other affections. The form of scleroderma known as "sclerodactyly," because of attendant alterations in the deeper tissues, may be not unlike thrombo-angiitis. Röntgen-ray ex-

amination of the hand in sclerodactyly offers the most valuable means of differentiating the two diseases.

Buerger further concludes that while in thromboangiitis obliterans a definite and specific morphological change in the arteries and veins is responsible for the varied phenomena in the superficial capillaries, in Raynaud's and allied diseases the vasomotor and trophic disturbances are the outcome of irritative and exhaustive processes of the sympathetic nervous system.

Bernheim, B. M.: 'The Newer Blood-Vessel Operations: Who Should Do Them?' *Interst. M. J.*, 1915, xxii, 9. By Surg., Gynec. & Obst.

After speaking of reversing the circulation in humans, or the prevention of impending gangrene of the extremities, Bernheim reports a case where amputation of the foot was necessitated after an arteriovenous anastomosis had been done between the femoral artery and vein. At the time of amputation it was found that one vein accompanying an artery bled bright blood in a constant stream from the proximal end. Another vein bled in spurts from the proximal end, the blood being bright red in color. He considers this ample proof that the circulation, in this case at least, was reversed.

He discusses the danger of this operation, and decides that it is no greater than that of other operations of similar magnitude. He, furthermore, says that one reason for the failure of the modern blood-vessel operations is that they have not infrequently been done by men improperly qualified to do them, and he gives concrete illustrations of his argument. He believes that the criticism of many clinicians is uninformed rather than unfriendly, and says that the most curious feature of all is that men whose judgment and fairmindedness in other surgical work is unquestioned, take particular pains to condemn the newer blood-vessel procedures without going to the trouble to discover if by any chance their arguments might be false.

He claims that the surgical maladies of veins and arteries have not been given the same study and consideration that have been given to the medical diseases of veins and arteries. He believes that no real progress in the clinical application of vascular surgery will be accomplished until one member of each surgical staff of the various hospitals is specially trained to do this work, and is given it to do. He predicts that the future will see the development of vascular surgery as a specialty, just as neurological surgery is now a specialty.

POISONS

Dyas, F. G.: Treatment of Acute Infections. *Surg., Gynec. & Obst.*, 1915, xx, 211.

By Surg., Gynec. & Obst.

The purpose of the author's work was to determine the effect of the X-ray upon pure cultures of different pathogenic micro-organisms. Different

lengths of exposure were used and the Petri dishes were placed at different distances from the tube. The work was suggested by the success in the treatment of infections by heliotherapy. A review of the literature shows practically a consensus of opinion that the only beneficial results accruing from the therapeutic use of the X-ray in acute infections is brought about by the localized hyperæmia. The chronic infections, especially tuberculosis, respond more readily. Tables showing the detailed results of the experiments confirm the reports of other workers.

The conclusions are as follows:

1. The X-ray has no influence upon pathogenic bacteria which could be withstood by living tissues.
2. Successful results following its use clinically are probably due to the increased hyperæmia and local tissue irritation.
3. The failure of the X-ray to kill the usual pathogenic micro-organisms does not prove that some other form of rays or light or radio-active substance might not be successful in the treatment of infections.

ELECTROLOGY

Pinch, A. E. H.: A Report of the Work Carried Out at the Radium Institute, London, in 1914. *Brit. M. J.*, 1915, i, 367. By Surg., Gynec. & Obst.

While this report has been abridged, it describes the work done by the institute for the year 1914, and, like those of previous years, is of the same conservative character. The deductions have been based upon the observation of 841 cases, and with the exception of superficial epithelioma no case was accepted that was suitable for operation. Of this long list of cases 19 were cured, 50 were apparently cured, and 328 were improved.

An outline of the technique employed and the reason for its employment is given, and as Pinch has had an opportunity to observe a large number of cases, and as his views are at variance with some of the leading dermatologists of this country, they might be quoted in full, with profit. All tissues when treated with radium respond in some manner, but the nature and extent of this response vary greatly, and depend upon: (1) the apparatus, screening, and dosage employed; (2) the nature of the tissue treated; (3) the condition of the tissue treated (if X-ray ionization, CO₂ snow, etc., have been previously used in attempts to bring about a cure, the reaction in such cases is frequently atypical, and repair is exceedingly slow); (4) the extent of the area treated; (5) personal idiosyncrasy, which is often productive of puzzling results. The factors to be considered are age, sex, and temperament, and susceptibility to actinic rays generally; for example, persons who suffer much from freckling or solar eczema, hyperidrosis, exalted vasomotor sensibility, etc.

Carcinoma generally is best treated by surgical measures, and even epitheliomata occurring within

the buccal or pharyngeal cavities as well as other mucous surfaces have proved rebellious; good results are occasionally seen, but as a rule they are only temporary. In cases of carcinoma of the uterus gratifying results have been observed; hæmorrhage and discharge are arrested and at times the fungoid ulceration has healed. Four cases of uterine fibroids were treated likewise and all improved.

Attention is called to the post-operative treatment of these pelvic cases where the resistance of the parts has been lowered by the injury of the trophic nerve supply; treatment is likely to be followed by a severe vaginitis or proctitis, and even extensive ulceration may follow.

In carcinoma of the breast isolated nodules have been successfully treated, but little or no effect upon metastasis was observed.

The results of the treatment upon cases of carcinoma of the rectum have not been as favorable as those occurring in the uterus or the prostate.

Pinch has also made a distinction between cases of rodent ulcer, dividing them into two classes: (1) the hypertrophic nodular type, which yields most satisfactory results, and (2) the excavating type, that proves very intractable and repairs with difficulty.

In the treatment of sarcomata, the tubes often have been buried within the growth and in some instances the subsidence of the growth has been extremely rapid. All, however, did not yield to treatment. Of 22 cases treated 3 were apparently cured, and 10 were improved. In lymphadenoma 4 cases were treated and all improved. The same result was observed in 4 cases of adenoma of the thyroid.

Other conditions, such as nevi, lupus, keloids, pruritus, angioneurotic oedema, etc., were treated with fair success by the application of radium. Internal medication deals with the treatment of arthritis deformans, the usual dosage being about 250 ccm. of radium emanation solution of a strength not less than 1 millicurie per liter. Some brilliant results were observed, and of 168 cases treated 91 were improved.

W. S. NEWCOMET.

Cumberbatch, E. P.: Diathermy: Its Production and Use in Medicine and Surgery. *Arch. Röntg. Ray*, 1915, xix, 282.

By Surg., Gynec. & Obst.

In using diathermy, if a large mass of tissue is to be destroyed a general anæsthetic is required. Small superficial lesions do not require an anæsthetic. The part to be treated and the active electrode should be sterilized. The active electrode must be chosen to meet the particular needs of the condition to be treated. The indifferent electrode should be large and must make good contact. The electrodes must be placed in contact with the part before the current is turned on and left so until the current is stopped. The treatments should be stopped when the liquids in the tissue boil and sparks appear on the coagulated tissue.

The author gives in detail the technique followed in St. Bartholomew's Hospital in the treatment of inoperable malignant growths. The malignant tissue is coagulated, and the blood-vessels and lymphatics are sealed so that the danger from metastasis is lessened. After about five days the tissue sloughs away and the wound heals by granulations.

If the skin has been destroyed by diathermy, keloids are prone to develop. Surgical diathermy is not followed by shock nor by pain until the slough begins to separate. As regards results, life has been prolonged in a number of inoperable cases; and in several others, in which there was no material prolongation of life, the remaining period was made much more bearable by alleviation of disagreeable symptoms.

G. W. GRIER.

MILITARY SURGERY

Horsley, V.: Gunshot Wounds of the Head. *Lancet*, Lond., 1915, clxxxviii, 359.

By Surg., Gynec. & Obst.

The author has employed modeling clay in carrying out a series of experiments upon the effects produced by high-velocity bullets. The modeling clay resembles the tissues somewhat, in that it contains a considerable percentage of water in its interstices.

The experiments showed that the so-called explosive effect of a high-velocity bullet is directly proportional (1) to the sectional area of the bullet, (2) to the velocity, (3) to the amount of water present in the substance through which the bullet passes, and (4) that the forces of disruption are at an angle to the axis of the flight of the bullet.

Further experiments were undertaken to show (1) where in the course of the bullet the most mischief is done and (2) by what force. The clay showed that the maximal disturbance is produced as soon as the bullet at its highest velocity is surrounded by the largest mass of wet tissue. This would explain the larger aperture of exit as compared with the aperture of entrance.

In regard to the forces producing the injury, these relate to the two movements of the bullet: (1) its progression forward; (2) its spin around a central axis given to it by the rifling. The more important movement from the pathological standpoint is the rotary spin. As regards the influence of the shape of the bullet, the author believes it depends entirely upon the transverse area of the bullet.

Experiments were performed to determine the frequency of the turning over of the bullets. These experiments indicate that bullets turn not infrequently, but turn over only once.

From the clinical standpoint there are several conditions to be considered. Concussion is common and may be fatal without penetration of the skull. Death is probably due to a sudden increase in the intracranial tension, so as to interfere with functional activities of the vital centers.

Rise of intracranial pressure is often due to intracranial hæmorrhage, and immediate operation is the only hope for the patient.

Sepsis is a common sequel of head injuries and is frequently due to foreign substances being carried deep into the cranial cavity. Rigid antiseptic treatment is advocated to prevent the occurrence of sepsis. Hernia cerebri may occur either from aseptic or septic wounds.

Functional disturbances of the brain may involve either the sensory or motor areas, and complete restoration of function in these cases is questionable.

J. H. SKILES.

Enderlen: Gunshot Wounds of the Intestines.

Nashville J. M. & S., 1915, cix, 9.

By Surg., Gynec. & Obst.

The author has arrived at the following line of treatment of gunshot wounds of the intestines: If possible all cases should be operated upon within a very few hours after the injury has taken place; cases which have to be transported long distances and where more than eighteen hours have elapsed since the injury should be treated expectantly with rest in bed, morphine in large doses, and absolutely nothing by mouth. It has been his experience, contrary to that of many others, that expectant treatment as a routine results in more fatalities than where the cases are operated upon within the first few hours.

J. H. SKILES.

Hirschel, G.: Gunshot Injuries of Nerves and the Use of Calves' Arteries in Operating on Them

(Erfahrungen über Schussverletzungen der Nerven und die Verwendung von präparierten Kalbsarterien zu ihrer Umhüllung). *Deutsche Ztschr. f. Chir.*, 1915, cxxxii, 567. By Surg., Gynec. & Obst.

Nerve injuries have been very frequent during the present war. Sometimes an apparently slight injury destroys the function of an entire extremity. Diagnosis of these nerve injuries is not always easy, because the nerve symptoms are masked by injury to the bones and soft parts. There may also be local nerve shock, which later disappears without the nerve being organically injured.

Hirschel describes 30 cases on which he has operated for injuries to various nerves. In all gunshot lesions of the extremities the possibility of nerve lesions should be taken into consideration. If there is no improvement in the nervous symptoms in the first few weeks after conservative treatment and the diagnosis of nerve injury is tolerably certain, operation should be performed. If the nerve is entirely severed, the ends should be freshened and sutured together. If they are embedded in scars, the scars should be excised, the nerve sutured, and the cicatricial adhesions freed.

In order to prevent re-formation of the adhesions and furnish a trellis for the nerve-fibers, nerves have formerly been embedded in fascia or fat. In place of these tissues Hirschel recommends calves' arteries. These are removed under aseptic pre-

cautions, hardened 48 hours in 5 to 10 per cent formalin, kept for 29 hours in flowing water, boiled for 20 minutes, and then kept in 95 per cent alcohol until ready for use. They are easily applied to the nerve on operation.

The author has used this method in 18 cases and healing was uneventful in all.

Animal experiments and observations on human beings have shown that the implanted arteries keep their form after two months, only decreasing a little in length and thickness.

Hirschel cannot yet report permanent results of his nerve operations as the time is too short, but in several cases he has already noted marked improvement in their function.

A. Goss.

Holland, C. T.: The X-Ray Work at the First Western Base Hospital.

Arch. Röntg. Ray., 1915,

xix, 307.

By Surg., Gynec. & Obst.

The author says that, generally speaking, they do not see the desperately bad cases at the hospital. They do not have many deaths and they but rarely have abdominal wounds to treat, and there are only a few cases in which the bullets have traversed the thoracic cavity or entered the skull. The greatest number of wounds are due to shrapnel bullets or bits of lead; Mauser bullet wounds are seen in much smaller numbers. In all probability in cases where no foreign body is found, and an entrance and exit wound are shown, the wounds are due to rifle bullets.

Owing to the distance which many of these bullets travel in the body, it is useless and unsafe to trust to the taking of plates alone. An extensive search over a large area should be made with a screen before deciding that a bullet is not present. On the other hand, it is never safe to decide from a screen examination alone that no foreign body is present, as not infrequently, instead of a whole bullet, splashes of lead are scattered around, and they are often so small as not to be detected on the screen. As splashes of lead have very little penetrating power, they are always to be found in the immediate neighborhood of the wound.

The best way to make the fluoroscopic examination is from below up. It is essential that a diaphragm should be used above the tube so that a very small area can be easily illuminated on the screen at a time.

Great difficulty is frequently experienced in examining a patient because he is in great pain or because wounds in the neighborhood of joints make it difficult to handle the patient. This is rarely appreciated by the surgeon who expects exact work.

Two plates at right angles to each other are often sufficiently accurate for the removal of the foreign body; this method is applicable to the limbs, especially to the lower parts of the arms and legs. Radiographs of this kind will tell with certainty whether or not the bullet is situated inside a bone.

Stereoscopic radiography is often of the greatest

use, showing very clearly the position of the foreign body in relation to the bones, and if the skin is painted over with a bismuth solution a good idea of the depth of the bullet may be gained. A small piece of metal may be affixed to the entrance of the wound, and the stereoscope will show the relation of the bullet to this mark. If this method is employed, it is essential to remember that at the operation the limb must be in the same position as when the radiograph was taken.

The surgeon himself should see the plates in the stereoscope before operating. This applies to all X-ray methods of localization. Stereoscopic radiography is of great assistance in the neighborhood of such joints as the shoulder and hip.

The most exact method of localization known is the Mackenzie-Davidson. This necessitates the use of special apparatus and takes considerable time.

A method which seems to the author to meet the difficulties sufficiently well is a modification of the Mackenzie-Davidson, devised and worked out by Hampson of London, which has the advantage that the work may be done quickly and by means of the screen alone. The author uses this method almost invariably at Fazakerley.

The method, the apparatus, and the technique are extensively described as well as several devices worked out by the author, assisted by Oram, for rendering the method more accurate and easier to execute. Great credit is given to Hampson and Barclay for their valuable work.

Concluding the subject of foreign bodies, Holland says: "With all this though, one must recognize the fact that it is one thing to see and locate a bullet with X-rays, and it is another matter altogether to find and remove it."

Speaking of bone injuries, Holland says that the chief feature of all is the comminution of the bone, and the often marked displacement of the small fragments. Some radiographs show that a missile has passed through a limb and gouged away a piece of bone; in such cases it is important to remember that often the bone is also extensively split at the site of the damage, and care should be taken with the bone so weakened that a complete fracture be not later brought about.

The screen examination is not sufficient. A plate will always show more detail of the bone injury, and in many cases will show fragments of lead which are mixed up with the bone fragments. In most cases it is the question of an infected and suppurating wound, in addition to the fracture, with the possibility that pieces of cloth, etc., not shown by X-rays, are present.

The author dwells on the importance of skilled

X-ray work in dealing with these cases, calling attention to the fact that an X-ray apparatus improperly handled is a greater detriment to the patient than its absence would be.

ARTHUR F. HOLDING.

Hofmeister, von: Operative Removal of Bullets and Fragments of Grenades, with Special Reference to the Use of the Electromagnet (Über operative Entfernung von Geschossen und Granatsplittern, mit besonderer Berücksichtigung des elektromagnetischen Verfahrens). *Beitr. z. klin. Chir.*, 1915, xcvi, 166. By Surg., Gynec. & Obst.

The opinion still prevails among the laity that the most important thing to be done in case of gunshot injury is to remove the bullet. Von Hofmeister points out that a metallic foreign body, as a rule, is perfectly harmless and the wound heals without reaction. The mere presence of a bullet is not an indication for operation, nor is the desire of the patient. If phlegmons or abscesses arise, the projectile generally plays only a secondary part in their formation. The object of operation in these cases is not primarily to remove the bullet, but to procure free egress for the secretion. The projectile may be removed if it lies in the abscess, so that its removal is easy, but the surrounding tissue should not be probed for it, as removal of the bullet or fragment is only indicated when it is in a location where it may do further injury, as in the eye, the bladder, the trachea, etc., where it exercises pressure on nerves or vessels or where it interferes with the motion of joints, tendons, or muscles.

It has been claimed that lead bullets may produce toxic effects due to lead poisoning, but, though this may be true to a certain extent, von Hofmeister believes that the danger of lead poisoning is less than that of operative interference.

There are two procedures which tempt surgeons to remove foreign bodies unnecessarily: (1) röntgen photography and (2) the use of the electromagnet.

The röntgen picture shows the position of the foreign body so plainly it seems the simplest thing in the world to remove it. Von Hofmeister thinks that it is not justifiable to extend the use of the electromagnet from ophthalmology to general surgery. The magnet easily removes the body from the fluid media of the eye, but not through solid muscle or cicatricial tissues.

Surgeons should be impressed with the fact that the indications for the removal of a foreign body should be as definite as for any other surgical procedure, and no physician need be ashamed to refer a patient to a surgeon for this purpose. A. Goss.

GYNECOLOGY

UTERUS

Hargrave, E. T.: The Early Diagnosis of Cancer of the Uterus. *Virg. M. Semi-Month.*, 1915, xix, 576.
By Surg., Gynec. & Obst.

Thorough investigation is advised of any case presenting (1) any atypical bleeding, including all cases of menorrhagia and metrorrhagia, all deviations from normal menstruation, return of bleeding after the menopause, bleeding after exercise, defecation, etc.; (2) any increase in the amount or change in the character of the discharge in a woman who has leucorrhœa; (3) any irregularities on the surface of the cervix whether they bleed on touch or not. Pathological examination of the cervical tissues and uterine curettings is insisted upon. D. H. BOYD.

Dégrais and Bellot, A.: Uterine Cancer and Radium (Uteruskrebs und Radium). *Strahlentherap.*, 1914, v, No. 1.
By Surg., Gynec. & Obst.

Operable cases were only treated with radium if the operation was contra-indicated. Among the inoperable cases there was not a single case in which the patient did not receive some benefit from the radium treatment. Even the worst cases remained until the end in excellent spirits as pain and hæmorrhage ceased or decreased. In recurrences radium at times failed completely. In two cases of sarcoma of the uterus excellent results were obtained. The histological findings and drawings present nothing new. A few side actions of the radium treatment are mentioned: nausea and at times vomiting; on the following days frequently decided prostration; after 10 to 14 days occasionally there was diarrhœa, tenesmus, and a frequent desire to urinate.

L. A. JUHNKE.

Ransohoff, J. L.: Radium in the Treatment of Cancer of the Uterus. *Lancet-Clin.*, 1915, cxiii, 289.
By Surg., Gynec. & Obst.

Operation is advised in all operable cases of cancer of the uterus. In inoperable cases radium stops the bleeding and the foul discharges, destroys the cauliflower-like masses, improves the general condition, and relieves the anæmia.

In the majority of these cases the improvement is only temporary. Radium is considered ineffectual at a depth of more than 3.5 cm.

Radium treatment should not be given in terminal stages with septic infection and extreme cachexia, nor in cases with extensive involvement of the rectovaginal or vesicovaginal septa. The dosage is 50 to 100 mg. of radium element. The radium is introduced in silver capsules and held in place by gauze packing. The duration of treatment

is 24 hours, and it is repeated weekly at first, later every three or four weeks. In the later treatments the radium is enclosed in a brass filter one-half to one millimeter thick in order to shut off all but the ultrapenetrating γ -ray and secure uniformity of penetration. D. H. BOYD.

Chéron, H., and Rubens-Duval: The Value of Radium Treatment of Uterine and Vaginal Cancer (Der Wert der Radiumbehandlung des Gebärmutter- und Scheidenkrebses). *Strahlentherap.*, 1914, v, No. 1. By Surg., Gynec. & Obst.

During the past five years the authors have observed clinically and made histologic investigations of more than 150 cases. For the treatment of inoperable cases they demand the ultrapenetrating raying of Dominici in massive doses. Filtration must be stronger the larger the quantity of radium.

Negative results may also occur with the application of massive doses, especially in patients who are cachetic and who are unable to react to the effect of the rays.

Histologically an elective action of the cancer-cells by the radium was proven; on the one hand plasmolysis and karyolysis; on the other hand maturing processes such as transformation into horn-lamellæ with later disintegration. The tissue becomes sclerotic and a marked increase in leucocytes takes place. Through blood-vessel changes the circulation becomes defective and scar tissue results.

The author observed a recurrence in a case which had for two years been clinically cured after radium treatment. It is generally accepted, however, that complete retrogression lasting more than a year is in the majority of instances really a complete cure. He reviews 158 cases, of which only a very few really were anatomically operable. One case which came to autopsy 15 months after the last radium treatment was proven to be anatomically cured. Complete retrogression clinically was observed 77 times; of these 46 showed no recurrence, and 22 of these have been free from recurrence longer than one year. In 31 cases the recurrence was purely local and only temporary. Retrogression sufficient to make the case operable was observed 12 times. In the remainder of the cases only palliative results were obtained. Only in two cases was there no clinical improvement observed. L. A. JUHNKE.

Boldt, H. J.: Contribution to the Cure of Cancer of the Uterus by Curetting for Diagnosis. *Surg., Gynec. & Obst.*, 1915, xx, 313.

By Surg., Gynec. & Obst.

Boldt considers the cure of cancer of the uterus by curetting for diagnosis, and reports a case of very

early cancer of the body of the uterus which came under his care as the result of routine microscopical examination of all curettings.

He divides pavement-epithelium cancer into ripe, middle-ripe, and unripe. The individual nests are called ripe when distinctly crenated cells are present; middle-ripe and unripe when crenation is absent, regardless of whether cornification is present or not. He differentiates between middle-ripe and immature nests in that in the middle-ripe a larger number of polygonal, even well-defined cells are present; whereas in the unripe, although they show no cornification, the small round elongated formed, or irregularly formed, elements are in preponderance.

The primarily solid carcinomata he subdivides into ripe, middle-ripe, and unripe without consideration of the duration of the disease, only taking into consideration the morphology of the nests; and under "ripe" those forms are included which give the principal characters of pavement-epithelium.

He notes that authoritative pathologists find it impossible to diagnose cancer until there are positive signs of the destrucency of the growth.

Among the solid cancers the immature occur more frequently, and are more malignant than the others. The vagina is involved in 40 per cent of all cases, but not in its superficial surface, but lymphatically.

Schottländer and Kermauner observed that all small cancers were within the compass of laceration ectropium in the neighborhood of the external cervical opening. The case for consideration was a woman 47 years old who had been advised to have a hysterectomy done because, she was told, she had cancer; the diagnosis was based upon scrapings said to have been obtained from her. Not being able to find, either subjectively or objectively, the slightest evidence at that time for suspecting cancer of the corpus uteri, he proposed that because he failed to obtain the section upon which the diagnosis of cancer had been based, for his own inspection another curetting be done for diagnosis. This was done two weeks subsequent to the previous curetting. All scrapings (serial sections were made) were found to be normal endometrium. Some time afterward two slides with the scrapings upon which the diagnosis in this case had been based were given to him for inspection. They showed advanced adenocarcinoma. A number of authoritative pathologists — among them William H. Welch and Thomas Cullen of Baltimore, Schottländer of Vienna, and Jonathan Wright of New York — examined these slides and the sections from the scrapings taken by Boldt. All agreed in the opinion that it was more likely that an accidental mix-up in the scrapings had occurred than that they came from the same patient. Opposed to this was the statement of the pathologist that this could not have taken place. This would then be the first and only case in which an advanced adenocarcinoma had been cured by a curetting for diagnosis.

The other case was that of a woman 36 years old in whom the examination of the scrapings removed by curetting, done during the course of other operations, without suspicion of carcinoma being present, showed distinct early adenocarcinoma. When the uterus was extirpated two weeks later, the most painstaking examination of serial sections of all parts of the uterine mucosa failed to show cancer.

Frigyesi: Specimen of Carcinoma of the Uterus Four Months After Ligation of the Hypogastric Artery (Uterus-carcinompräparat 4 Monate nach Ligatur der Arterie hypogastrica). *Zentralbl. f. Gynäk.*, 1914, xxxviii, 817.
By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In borderline cases which are shown through laparotomy to be inoperable the author ligates all the arteries leading to the uterus.

The specimen he demonstrated came from a 52-year-old woman who had recovered and was feeling well four months after the operation, when she suddenly showed uræmic symptoms and died. A noteworthy point was the large number of blood-vessels in the parametrium, some of which showed hyaline degeneration and were filled with carcinomatous cells.

RUHEMANN.

Ladinski, L. J.: Complete Removal of Adenocarcinoma of the Uterus by Exploratory Curettag. *Surg., Gynec. & Obst.*, 1915, xx, 325.
By Surg., Gynec. & Obst.

The author reports in great detail a most careful and complete pathological study of 3 cases of adenocarcinoma of the body of the uterus, in all of which the lesion was totally removed by exploratory curettag. This appears to be the first contribution to English medical literature of instances in which subsequent hysterectomy demonstrated no further trace of the lesion. In 2 of the 3 cases there was no demonstrable carcinoma, although the uterus was subjected to careful sectioning. In one case ensuing curettages by another surgeon failed to reveal the persistence of the adenocarcinoma found by Ladinski. This case was the basis of considerable question until the 2 other cases operated by him proved beyond doubt the possibility of complete removal by exploratory curettag of a carcinoma of the uterus. The author's cases are in many respects analogous to reports in foreign literature.

While demonstrating the possibility of removing *in toto* a small or even large carcinomatous mass from the uterus with the curette, Ladinski nevertheless warns against the practice of stopping with this procedure alone, and urges the radical removal of the uterus as the only hope for a complete cure. His cases also emphasize the great importance of resorting to diagnostic curettag and exploratory excision in every suspected cancer of the uterus, and of unfailingly submitting such material for pathological examination. Only by this means can cancer mortality be lessened.

Lane, N. F.: An Unusual Uterine Fibroid. *Hahne-man. Month.*, 1915, 1, 170.

By Surg., Gynec. & Obst.

The fibroid developed from the lower posterior part of the uterus downward, separating the peritoneum from the posterior vaginal wall, opening through into the vagina by pressure necrosis, and elongating from pressure and traction, appeared at the vaginal orifice as a polyp, the vaginal wall through which it protruded being drawn down enough to look like a cervix.

The vaginal portion was removed first and the vagina closed off. One week later the whole tumor was removed through an incision in the posterior vaginal wall.

D. H. BOYD.

Abbe, R.: Uterine Fibroids, Menorrhagia, and Radium. *Med. Rec.*, 1915, lxxxvii, 379.

By Surg., Gynec. & Obst.

This paper deals with the subject of the treatment of uterine fibroids with radium and the therapeutic value of the radio-active water of the various spas both in this country and abroad, and gives a table by way of summary of some radio-therapy investigations.

Uterine fibroids cause bleeding either from a highly vascular hypertrophied endometrium or from open-mouthed vessels in the thinned-out mucosa over the fibroids. Curettage will often remove these weak vessels and so control the menorrhagia; sometimes gallic acid administered internally will relieve the patient, or intra-uterine swabbing with antipyrin and salol will arrest the hæmorrhage, but more often hysterectomy is needed to effect a cure. Radium introduced within the uterus in a small aseptic tube will stop the bleeding, and, fortunately, will usually cure the tumor as well. It was first used for bleeding from fibroids in one of Abbe's cases in 1905. Wickham had pointed out that this agent caused an obliterative endarteritis, so the author was led to believe it would influence intra-uterine vascularity. His early work as well as that of Kelly and Burnham met with marked success.

While Krönig and Gauss have shown the action of radium to be similar to that of the X-ray in its effect on the uterus, the X-ray is both expensive and dangerous to employ for this purpose. The γ -rays from the radium as well as from the X-ray are the deep penetrating force, but the repression of the tumor-cells is done by the β -rays, which are generated by the impact of the γ -rays with all substances through which they pass.

That radio-activity as applied to waters is a potent factor in therapy is evidenced by the fact that the most renowned spas in Europe are those in which the waters are found to possess the highest radio-activity, though of course it must be granted that the saline, ferric, and carbonic principles are equally important in eliminative treatment.

Over a period of two thousand years radium evidences the most remarkable liberations of energy

known to man, and its entire life will not have been spent much short of eighteen thousand years. This energy is due to some disruptive force whose manifestations are known as α -, β -, and γ -rays, widely diverse in their type and power of penetration. The α -rays are atoms of helium charged with positive electricity and are given off with a velocity of twelve thousand miles per second; the β -rays are negatively charged electrons with over ten times the velocity of the α -rays and nearly one hundred times their penetrative power. The γ -rays are defined as rays of an ultraviolet light of such exceeding short wave-length that they will penetrate several inches of lead or six inches of battleship steel. It is the β - and the γ -rays that are used in destroying cancerous tissue.

While we have much to learn as to the definite process by which emanation exerts its beneficent influence, yet we do know that cardiac activity is lessened, blood-pressure lowered, coagulation-time shortened, the red blood-cells markedly increased; there is a temporary leucocytosis and a lasting tonic effect. Emanation therapy is of most importance probably in those diseases of the heart, kidneys, and arteries which evidence degenerative changes. Arteriosclerosis, high blood-pressure, various forms of arthritis and muscular rheumatism, stubborn neuralgia, myalgia, gout, and neuritis are greatly relieved. Startling results frequently are produced in the ferments which control digestion and in the stimulation of general metabolism. Spinal cord affections respond, and the pain of tabes is almost always controlled.

The author compares the water of the Saratoga springs in its radio-activity in Mache units with that of most of the spas of Europe, and gives the technique for the administration of the baths, inhalations, etc., in the treatment of diseases by radio-active waters.

C. D. HOLMES.

Kelly, H. A.: The Radium Treatment of Fibroid Tumors. *Surg., Gynec. & Obst.*, 1915, xx, 271.

By Surg., Gynec. & Obst.

Massive doses of radium applied within the uterus will either so completely cure or so far relieve all cases of fibroid tumors as to obviate all necessity for operation.

In 36 out of the 37 cases which Kelly reported, radium either caused the tumor to disappear or so far reduced its size as to render it innocuous. In every case subjected to an intra-uterine radiation, the hæmorrhage has been controlled and wherever it has been desirable amenorrhœa has been produced.

Such radium treatments calling for from 300 to 500 mg. of radium element only last a few hours and, as a rule, do not have to be repeated; furthermore, they are without risk. Such a treatment is pre-eminently adapted to tumors in young women, where menstruation can sometimes be conserved, and in hæmorrhage cases, especially where profound anæmia is found.

Radium treatment does not preclude and in no wise complicates a surgical operation if it is thought best to do one later.

Hofstätter, R.: Hypophysis Medication in the Hæmorrhages of Puberty (Hypophysenmedikation bei Pubertätsblutungen). *Gynäk. Rundschau*, 1914, viii, 541. By Surg., Gynec. & Obst.

The author employed hypophyseal extract in 12 cases of severe menstrual bleeding with irregularity during puberty. Before the commencement of the treatment the girls suffered with pathologic menorrhagias lasting from a few months to five years.

All the different preparations of hypophyseal extract were tried, but the author ascribes the greatest action to Parke, Davis & Co.'s pituitrin and to the pituglandol of Hoffman-La Roche. Of the 12 cases 9 were cured in a relatively short period of time. One case reacted well primarily but later was not influenced by the extract. Two other cases could not be observed long enough to form definite conclusions.

L. A. JUENKE.

Kubinyi, von: Tuberculosis of the Uterus and Tubes; Total Extirpation (Tuberculosis uteri et tubae; Totalexstirpation). *Zentralbl. f. Gynäk.*, 1914, xxxviii, 811.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

A 28-year-old patient who had had tuberculous peritonitis as a child, after marriage had indefinite pains, and her general condition rapidly grew worse. Laparotomy showed caseous tubes and an intraligamentary cystoma. Total extirpation was followed by febrile pleurisy, then uninterrupted recovery.

The specimen showed that in the mucous membrane of the uterus there were several tuberculous ulcers, and in the musculature there were two cavities as large as a hazelnut. Histologically there were typical tuberculous granulations; bacilli negative.

RUHEMANN.

Tate, M. A.: Infantile Uterus. *Ohio St. M. J.*, 1915, xi, 162. By Surg., Gynec. & Obst.

The author discusses some of the characteristics of this condition, the symptoms of a typical case, and the prophylactic as well as the active management of such a malformation.

Simpson was the first to use the term "infantile uterus," but this condition has been variously termed by other authors, "pubescent uterus," "puerile uterus," etc. The infantile type of uterus has had a multitude of descriptions as well as theories regarding its origin.

An infantile uterus preserving many of the characteristics found at birth may be described as follows: The whole organ is narrow in proportion to its length, the external os is small, the cervix conical and often very long in proportion to its body, and cases are recorded where the body of the uterus was so small as to be little larger than a pea.

If the body should be large, it is probably pathologic, due to some inflammatory condition. Arrest of development may take place at any time from birth to adult life, so that an adult woman may have a uterus no larger than she had at birth.

Embryologically, the uterus and vagina both come from a single tube from the lower end of the müllerian ducts, and at about the fifth month they become separate units. The uterus at birth measures 2.5 to 3 cm., and remains small until about the twelfth to the fifteenth year, when it grows rather rapidly with the establishment of the menstrual function. The relation of the body length to that of the cervix is as 0.5:1 in the child, 1:1 in young virgins; later on the body becomes still larger, as 2 or 3:1 in a multiparous uterus. Associated with an infantile uterus may be found a lack of development of the ovaries, vagina, pubes, and breasts. In patients suffering with this condition menstruation is painful and scant, and sterility is the rule. They begin menstruating late in life and may have the menopause as early as thirty. Hegar believes infantilism and not gonorrhoea is responsible for many cases of sterility.

The treatment of this condition is to be met by surrounding the growing girl with the best hygienic conditions. Fresh air, judicious exercise, proper food, care of the body, etc., all give the child a chance to develop along proper lines. Marriage should be prohibited in infantilism, as only unhappiness would result to both contracting parties. The best results in the active treatment of this condition are obtained when the condition is found early. Dilating the cervix will sometimes bring some results in establishing the menstrual function and may need to be repeated in from six to twelve months; slitting of the cervix has been tried, but it is questionable whether it has any real value. The stem pessary has been used, also complete hysterectomy for this condition, but the author has not used either — the former being dangerous and the latter not being necessary because he has not met with a case serious enough to require its use.

C. D. HOLMES.

Aschheim, S.: The Question of Internal Secretion of the Uterine Mucosa (Zur Frage der inneren Sekretion der Uterusschleimhaut). *Zentralbl. f. Gynäk.*, 1914, xxxviii, 1497.

By Surg., Gynec. & Obst.

In an earlier article the author showed that the presence of larger quantities of lipoids within the uterine glands was confined to the premenstrual phase of menstruation, and that post-menstrually and during the interval lipoids are found there only rarely and then in very small quantities. During the early months of pregnancy the glandular epithelium is rich in lipoids. The stroma cells also contain lipoids, likewise the decidua cells of pregnancy but in variable quantities. The lipoids behave in the same manner as the glycogen, which was demonstrated a few years ago by the author as

also occurring in the premenstrual and pregnancy glands. Driessen also reported similar findings. The author discussed the possibility of there being an internal secretion from the uterine mucosa; also Shottländer has later considered the decidua as an internal secreting organ. Gentili, who claims priority for the proof of an internal secretion in the decidua, bases his claim upon the morphological similarity between the luteum and decidua cells and upon similar developmental and retrogressive changes taking place within the cells; secondly, that these decidual changes occur not only at the site of implantation of the ovum but also far from it.

He cites the view of Sfameni that the secretion of the decidua influences the entire organism (dilatation of blood-vessels). Sfameni is inclined to consider the decidua as an organ of internal secretion, believing that the lutein and decidual cells are of epithelial origin. Gentili considers the action of the decidual extract upon the blood-pressure (sudden and marked decrease) as absolute confirmation.

The author, however, does not believe that the decidua has any internal secretory powers, although he is unable to bring any positive proof. Purely morphological similarities prove nothing; a histological proof of decidua cells being surrounded with capillaries like the lutein cells is lacking, although the decidua is rich in capillaries. It may be possible also that the internal secretion is carried by the lymph stream. The animal experiments do not prove anything. The effect of reducing or increasing blood-pressure is characteristic not only for decidua cells but for all organic extracts and cannot be attributed to specific action. We inject extracts but do not know what part of the substance is truly extract and what is but split protein product. It is well known that in the mucosa secretions like albumin, mucin, glycogen, and lipoids do occur. Since glycogen can find toxic products in the liver why not also in the uterus? Lipoids also are carriers of biologically active products, and the author is of the opinion that during pregnancy there probably are products of the nature of vitamins in the uterus. For the premenstrual mucosa we know, however, that all these substances are excreted — external secretions. Can we consider these substances which in fact pass over to the foetus during pregnancy as "internal secretions"? If so, we will have to broaden our conception of internal secretion. The author, therefore, is of the opinion that we ought to speak of external secretions of the uterine mucosa, the existence of which is definitely known, before we speak of internal secretions, the existence of which we are very much in doubt about.

L. A. JUHNKE.

Mayo, C. H.: **Uterine Prolapse with Associated Pelvic Relaxation.** *Surg., Gynec. & Obst.*, 1915, xx, 253. By Surg., Gynec. & Obst.

With retroversion and descent difficult to replace because of probable associated pelvic lesions or

other abdominal complaint the true condition of which should be known, an intra-abdominal operation should be made on the round ligaments. If, as rarely occurs, the cervix remains too far forward, the uterosacral ligaments should also be shortened to effectively bring the uterus to anteversion.

The interposition type of operation is efficient in the relief of uterine prolapse associated with extensive cystocele. The best results are secured in women having a firm uterus, which usually means an age limit within the forties. This operation relieves cystocele and descent or the first and second degrees of prolapse. In the third or fourth degrees of complete prolapse in women in the fifties with a soft degenerating uterus undergoing rapid atrophy and in whom the torsion of the ligaments in anteversion still permits the uterus to be brought out of the body the operation will undoubtedly fail of relief and another method should be substituted.

The modified Kocher operation is occasionally made upon women in the forties — in which case the tubes are divided — but it is usually reserved for women well past the change of life with atrophied uteri. For a large group of cases, or the third and fourth degrees of prolapse in patients between 45 and 65 years of age often with atrophy of the uterus and distention of the vaginal outlet, neither the interposition nor the Kocher types of operation are indicated. In these cases the following is an effectual method of securing relief:

The cervix is grasped with two pairs of cerebellum forceps and drawn well out of the vagina. A pear-shaped incision is then made with its apex one and one-half inches below the external urinary meatus. It passes down each side of the cystocele and around the cervix. The sides of the incision are grasped and the vaginal wall readily separated from the bladder by blunt gauze dissection. The apex of the vaginal flap attached to the anterior lip of the cervix is turned down and the bladder rapidly separated by gauze dissection from the front of the uterus. As soon as the peritoneal fold is reached it is incised and divided laterally. The blunt gauze dissection then separates the posterior vaginal wall from the uterus at the side and on to the broad ligaments. The sharp fork retractors are used to draw the fundus of the uterus out of the incision as in an ordinary hysterectomy and the cervix is restored within the vagina, and the broad ligaments are fully spread out on each side. Unless the ovaries are diseased they are not removed. A heavy hysterectomy forceps with long blades now grasps each broad ligament; the uterus is divided one-half inch from the forceps and two more pairs of forceps are applied, one on each side, with their tips catching the cul-de-sac behind the cervix; the uterus is then cut entirely away.

If there is any tendency of the sigmoid or omentum to prolapse, it is held back by a long pad of gauze inserted into the peritoneal opening. The forceps, two on each side, are approximated laterally and a running mattress suture of chromic catgut is

applied which passes back and forth behind the forceps completely through both ligaments at such a distance as to tighten the broad ligaments. From one and one-quarter inches to one and one-half inches approximation of these ligaments is secured. The method of suture is applied so as to interlock and prevent the inward slipping of any vessels. When the suturing reaches the round ligament side it is caught into the flap anteriorly where the bladder has been separated from the interior vaginal wall. This suturing extends backward on each side from this point catching into the broad ligaments and then on each side into the angle of the depth of the dissection, thus compelling the bladder to rest on the broad ligaments. The loose ends of the exposed broad ligament are approximated by a running button-hole stitch extending back to the perineal position and the sides of the vaginal mucosal flaps, and closed by a running catgut suture up and back in a submucous manner. No sutures are exposed.

Carlin, R. C.: Retrodisplacement of the Uterus. *J. Arkansas M. Soc.*, 1915, xi, 231.

By Surg., Gynec. & Obst.

The author objects to the use of the pessary in the treatment of this condition unless the patient can remain quietly at home all the time with nothing at all to do. This condition is definitely a surgical one. He is opposed to the use of the round ligaments in the surgical management of this malposition on the ground that their diseased condition was the cause of the trouble, and hence likely to cause a repetition of the same condition. After mentioning the common symptoms of headache, backache, nervousness, etc., with menorrhagia, leucorrhœa, and dysmenorrhœa, he describes his operation for ventral suspension in the cure of this displacement.

C. D. HOLMES.

Viana: Intra-Uterine Vaccination (Notizen über die intrauterine Impfung). *Rassegna d'ostet. e ginec.*, 1914, xxiii, No. 3. By Surg., Gynec. & Obst.

Viana conducted investigations in regard to whether immunity is conferred upon the foetus by vaccinating the mother by what he calls intra-uterine vaccination. The mother was vaccinated in 720 cases, 234 of which were clinical and 486 ambulatory cases. The results were positive in 75.7 per cent of the clinical cases and in 94 per cent of the ambulatory. In general it may be said that the result is positive if vaccination is performed during the ninth month of pregnancy. The percentage of positive results is less if done before that time and almost nil if done before the sixth month.

L. A. JUHNKE.

Cranmer, R. R.: Vaginal Hysterectomy Under Spinal Anæsthesia. *J. Lancet*, 1915, xxxv, 125.

By Surg., Gynec. & Obst.

Spinal anæsthesia was selected in Cranmer's case because the patient was elderly and suffered

from bronchitis and arteriosclerosis with heart and kidney complications. By the injection of 2 drams of a 2 per cent solution of novocaine, he was enabled to perform vaginal hysterectomy for disabling prolapse and the patient was able to leave the hospital on the twelfth day.

W. H. CARY.

Outland, J. H.: A Simplified Technique for Vaginal Hysterectomy. *J. Am. M. Ass.*, 1915, lxiv, 1060.

By Surg., Gynec. & Obst.

1. The anterior and posterior lips of the cervix are caught by a specially made double-pronged tenaculum. It serves the double purpose of making strong traction without tearing, and of sealing the lips of the cervix so as to prevent discharges from soiling the field of operation.

2. The incision is made, completely circumscribing the cervix.

3. By gauze dissection the posterior cul-de-sac is reached. The bladder is separated in the same manner.

4. By the use of two claw retractors, applied alternately one above the other, the uterus is rapidly delivered anteriorly. The usual custom of delivering the uterus anteriorly serves the very good purpose of separating the ureters, so that with reasonable care in the application of forceps there is no danger of including them in the bite of the forceps.

5. After the uterus is delivered, the left hand with the index finger extended is placed over the fundus of the uterus and is forced down through the peritoneum of the posterior cul-de-sac, or else acts as a guide by the side of which the cul-de-sac is opened with scissors through the posterior incision without danger of entering the rectum. In most cases the use of an instrument is unnecessary.

6. Clamps are now placed on the right broad ligament; usually two will suffice. The first clamp is placed on the broad ligament below and the broad ligament cut between it and the uterus before the second clamp is placed.

7. After the broad ligament on the right side is severed, the uterus is rotated and the clamps are easily placed on the left broad ligament and the uterus cut away. In many cases the procedure to this point has not occupied more than three or four minutes. If it is necessary to remove the tubes or ovaries, they may be included with the uterus in the second clamp.

8. With a double strand of No. 2 ten-day chromic catgut in a curved round needle, an over-and-over suture is made on one of the upper clamps; the clamp is withdrawn and the suture tied; all four ends, which should be at least 4 inches long, are caught in a clamp. The lower clamp is next sutured in the same way and the ends of the catgut left long. After proceeding in the same way to sew over the opposite side, all the ends of the sutures are brought out and enclosed in one clamp for each side.

9. The peritoneum is grasped in hæmostats anteriorly and posteriorly and sutured in a running

suture of catgut. The edges of the vaginal incision are next sutured. Openings are left at both ends of this incision through which the ends of sutures on the respective broad ligaments are brought out, caught in a clamp, and gauze wrapped around them. The clamps are removed at the end of 20 hours and the ligatures cut short.

EDWARD L. CORNELL.

ADNEXAL AND PERIUTERINE CONDITIONS

Herrmann, E.: An Active Substance in the Ovary and Placenta (Über eine wirksame Substanz im Eierstocke und in der Placenta). *Monatschr. f. Geburtsh. u. Gynäk.*, 1914, xli, No. 1.

By Surg., Gynec. & Obst.

That an internal secretion of the ovary exists seems definitely proven, but the question remains whether it is present in or made by the follicle apparatus, by the corpus luteum, or by the so-called interstitial gland. After discussing the literature in regard to this question as well as the physiology of the mammæ and the action of the ovarian and placental extracts, the author takes up his own experiments, the purpose of which was to study the active substance of the ovary and corpus luteum by biochemic means.

In the chemical part of the study general observations regarding the corpus luteum and ovary without the corpus luteum are discussed, each experimental method being described in detail. The carrier of the internal secretion is a yellow oily liquid which solidifies on cooling. A definite cholesterin reaction is obtained from it; it becomes brown on exposure to air, apparently through absorption of oxygen, and chemically is composed of carbon, hydrogen, and oxygen. The placenta also contains the same active substance as the corpus luteum with all of its physiological properties. The only difference is that the placenta contains quantitatively more active substance than the corpus luteum.

From the portion of the article bearing on animal experiments the following is gathered: The chemical substance isolated as the active secretion for the placenta and corpus luteum possesses a powerful developmental influence upon the entire genitalia (vulva, vagina, uterus, tubes, ovaries) and upon the mammæ of females as well as of males. This influence is capable of bringing young undeveloped rabbits to maturity within a few days. Five days after injection of the substance organic changes are perceptible in young animals 8 weeks of age, demonstrable by macro- and microscopic proof, as comparable to animals of 25 to 30 weeks old. If the injections are continued, the organic changes become as prominent as those during heat and during the beginning of a pregnancy.

The experiments of the author, in which he was able to develop the mammæ of castrated male animals so that they secreted, are a direct proof

for the hormonal dependence of the mammæ upon the internal secretion of the placenta and corpus luteum.

L. A. JUHNKE.

Meyer, R.: Adenoma Tubulare Ovarii Carcinomatousum and the Relation Between the Tubular Ovarian Adenoma and the Embryonal Rests (Das Adenoma tubulare ovarii carcinomatousum und die Beziehung des tubulären Ovarialadenoms zu embryonalen Organresten). *Stud. z. Pathol. d. Entwicklung Meyer u. Schwalbe*, 1914, ii, No. 1.

By Surg., Gynec. & Obst.

Relative to the observations of Pick on adenoma tubulare ovarii (testiculare) and Schickele on blastomatolice ovotestis the author reports several findings of ovarian tumors which he considered as adenoma tubulare ovarii. There is considerable similarity between these tumors, yet they can be differentiated from each other. The important histologic findings of the latter are: On section they are yellow and are divided into small lobes, the division being effected by means of connective-tissue septa connected with the capsule. In general the tumors consist of strands or tubules, curved or in loops, giving off numerous branches and so making a dense network. In the periphery these tubules are most dense and frequently run radially to the center. The normal tubules oftentimes have a very minute lumen, scarcely visible, lying closely upon the connective tissue, which in places is thickened to a membrana propria. Sudden cystic-like dilatations of the narrow tubules occur in places.

The tubules are characterized by a single layered, uniform, cylindrical epithelium. Their destructive tendency is shown in the migration through the septic and outer capsule; before that a proliferation of the epithelium within the tubules is frequently observed without any changes. The histologic changes accompanying this destructive growth are relatively small; the most important sign is the growing together of the tubules into net-like structures with the formation of communications. The tendency to retrogressive changes is rather marked. In addition to necrosis the partial sclerosis of the connective tissue produces an atrophy of the tubules by cutting off blood supply. It is necessary to differentiate metastatic ovarian adenocarcinoma from these tumors.

Histogenetic observations have shown that these tumors occur in persons who show none of the characteristics of hermaphroditism. Pick's view that there is a testicular element in these ovaries is not substantiated by any evidence. Morphologic similarity between tubular-testicular and ovarian carcinoma exists, but no evidence of any kind has been found that testicularanlage has been included in the ovary. Tubular adenomata are found in the hilus ovarii, but these grow from homologues of the male parts (rete and tubuli recti). The possibility of Pick's theory cannot be denied, but no evidence whatever has been found to substantiate it.

L. A. JUHNKE.

EXTERNAL GENITALIA

Cullen, T. S.: A Further Case of Adenomyoma of the Rectovaginal Septum. *Surg., Gynec. & Obst.*, 1915, xx, 263.
By Surg., Gynec. & Obst.

At the last meeting of the Southern Surgical and Gynecological Association Cullen referred to the literature on adenomyoma of the rectovaginal septum and reported two cases. Since then he has had another case. The growth was about 3 x 2 cm. and the rectum was intimately blended with the cervix. There was partial blockage of the bowel. The growth on section showed typical adenomyoma, the glands of the myoma being identical with those in the body of the uterus.

MISCELLANEOUS

Cary, W. H.: Bladder Irritability in Women. *Am. J. Obst.*, N. Y., 1915, lxxi, 259.
By Surg., Gynec. & Obst.

From his experience with this condition the author draws the following conclusions: Bladder irritability *per se* excludes acute inflammatory conditions of the urinary tract and conditions which may be considered as physiological and concerns cases of frequent urination and dysuria in which the urine analysis is normal.

Contrary to the usual teaching, trigonitis often exists without history of previous bladder trouble. The presence of cystocele, evident only when the patient is standing or sitting, may prevent emptying of the bladder and cause an irritating residual urine which acts as exciting cause. The location of the trigone makes it peculiarly sensitive to trauma and infection, hence the irritations following operation and catheterization. Continued hyperacidity of the urine and friction of the external genitals may be contributing causes. Chronic trigonitis usually responds readily to silver nitrate, and the two-way catheter is used most successfully in treatment.

Posterior urethritis exists much oftener than is commonly believed. It is easily recognized in an endoscopic examination. Women seldom develop posterior urethritis from acute infection, but it may be rendered persistent by infection of Skeene's glands with colon bacilli or gonococci. It may be excited by prolonged eroticism.

Irritability may arise from lesions about the meatus and hence inflammation may be persistent but usually yields to direct cauterization.

Eversions of the mucous membrane of the urethra, conditions simulating hæmorrhoid, and caruncle, may all be exciting causes, but may also exist without giving rise to bladder symptoms.

Association with other pelvic lesions is seldom influential in bringing about bladder irritability, except in circumstances that involve the bladder structure or cause pressure upon it.

Bladder irritability may rarely be considered a pure neurosis. Repeated examinations of the urine may disclose a cause for irritability in nephritis or in a tubercular kidney.

C. H. DAVIS.

Gibson, G.: Gynecological Operations Upon the Insane. *N. Y. M. J.*, 1915, ci, 293.
By Surg., Gynec. & Obst.

This report is based upon a study of the end-results of the gynecological operations performed by the author upon 100 insane women. He has arbitrarily divided the various forms of insanity into two groups, viz.: (1) forms of insanity in which appear various degrees of deterioration or dementia, e. g., dementia præcox, general paresis, epilepsy, and senile dementia; (2) forms of insanity in which dementia does not appear, e. g., maniac depressive insanity and its allied forms and paranoiac conditions.

The author states that in those cases of the first class where dementia is a marked characteristic, no surgical operation can do more than improve the physical condition of the patient; whereas in those of the second class where there is no dementia, the removal of pathological lesions from the pelvic cavity may be followed by both physical and mental improvement.

Of the author's 100 cases there were 50 cases of dementia præcox, 3 of epilepsy, one of alcoholic psychosis, and one of general paresis which belong in the first class. There were 26 cases of maniac depressive insanity, 13 cases of paranoiac condition, and 5 cases of involution melancholia which belong to the second class. There was one case of puerperal mania.

There was no improvement in any of the cases of the first class, directly or indirectly. Of the second class, 17 cases showed improvement directly attributable to operation. Of the 26 cases of maniac depressive insanity operated upon, 13, or 50 per cent, showed improvement. Of the 13 cases of paranoia operated, one, or 7 per cent, showed improvement. Two out of 5 cases, 40 per cent, of involution melancholia showed improvement. One case of puerperal psychosis improved after operation but died a few months later of exhaustion due to a delirious mania. One patient died the day following operation of pontine hæmorrhage, giving for the series a mortality of one per cent.

The author believes, with Taussig, that all patients with maniac depressive insanity having pelvic lesions should have them treated, either by local or operative measures.

The following table is appended to show the comparative results of the various operators:

	Cases	Mortality Per Cent	Improve- ment Per Cent
Rohe.....	34	0	56
Hobbs.....	173	2	68
Henry.....	28	3	57
Mayo.....	60	0	16
Brown.....	242	2	18
Taussig.....	17	0	17
Gibson.....	100	1	17

HARVEY B. MATTHEWS.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Cullen, T. S.: An Old and Infected Abdominal Pregnancy with Extension of the Long Bones into the Bladder and into the Bowel. *Surg., Gynec. & Obst.*, 1915, xx, 261.

By Surg., Gynec. & Obst.

Cullen reports the case of a colored woman 33 years of age who gave definite signs of pregnancy. She experienced labor-like abdominal pain which suddenly ceased, following which she passed some blood. Shortly afterward a tumor was noted in the right lower abdomen. This gradually diminished in size. The patient was admitted to the Johns Hopkins Hospital several years later. At that time a peculiar lump could be felt in the right lower abdomen, which gave a distinct feeling of crepitus. On exploring the sac Cullen found a packet of bones, all that remained of the old pregnancy. One of the long bones projected into the bladder and was covered with phosphatic deposits. The ends of two other long bones projected into the cæcum. After removing the sac and closing the opening in the bladder and the two openings in the cæcum a drain was placed in the pelvis. The patient made a good recovery.

Brooke, E. B.: Ectopic Gestation of Fourteen Years' Duration. *So. African M. Rec.*, 1915, xiii, 27.

By Surg., Gynec. & Obst.

In 1914 the author was consulted by a patient who complained of a lump in her abdomen, which she said had been present for 14 years. She had had three children previous to that time. Her periods had stopped on the appearance of the tumor. She also complained of frequency of micturition, which was gradually becoming worse, with some burning pain, and the urine voided was thick, whitish in color, and very foul. On palpation of the abdomen, an irregular hard tumor was found lying in the pelvis somewhat to the left side and extending up to about 2 inches below the level of the umbilicus. The tumor was practically immobile and apparently adherent to the anterior abdominal wall. The urine was loaded with pus.

On opening the abdomen much trouble was experienced in obtaining a clear view of the condition, owing to the numerous tough adhesions. As it was impossible to isolate the tumor, it was decided to open it and evacuate the contents, the adhesions being sufficient to prevent any general peritonitis. The contents were found to be the bones of a foetus completely ossified; some of these bones had worked their way through the wall of the tumor into the bladder and undoubtedly gave

rise to the bladder symptoms. The cavity was swabbed out with camphorated oil and drained.

The patient made an uninterrupted recovery. All bladder symptoms disappeared, and the menses appeared again and were normal.

This case is of special interest on account of the duration of the gestation and the normal resumption of the uterine functions after such a long period of inactivity.

EDWARD L. CORNELL.

Lynch, T. J.: Early Death from Hæmorrhage Due to Ruptured Ectopic Tube. *Med. Herald*, 1915, xxxiv, 9.

By Surg., Gynec. & Obst.

The first case, a patient 32 years of age, an American, married at the age of 20, and has one child, which was born two years after marriage, living and well. She was in normal health up to 2 p.m. on the day of the attack, when without any warning she fainted and a doctor was called. She regained only partial consciousness, sufficient, however, to make it known that she thought herself about three months pregnant and had attempted to produce an abortion on herself three days before by introducing a catheter into the uterus. During the doctor's visit she vomited several times and complained of intense abdominal pain. Death occurred at 6:10 p.m., four hours after the beginning of the symptoms. Autopsy next day showed an abdomen literally filled with hæmorrhage from a rupture of the middle third of the right tube. The uterus was large and soft, with no signs of infection or rupture.

The second patient, an American woman, 28 years of age, had been apparently in good health up to 12 o'clock noon, when suddenly she became unconscious after climbing a flight of stairs. The physician was able to get only a partial history from her. Owing to the absence of menstrual flow for the past two months she had on the day previous been to a doctor, who performed an abortion upon her. She complained of pain in the abdomen, but her shock was so profound that the pain was only moderate. Death occurred at 6:15 p.m., five hours and twenty-five minutes after the onset of hæmorrhage. Autopsy showed death was due to hæmorrhage from rupture of the distal third of the right tube. The foetus was free in the abdominal cavity. There was no apparent damage to the uterus in the attempted abortion.

C. D. HOLMES.

Gray, B. H.: Placenta Prævia: Its Etiology, Pathology, and Diagnosis. *Virg. M. Semi-Month.*, 1915, xix, 521.

By Surg., Gynec. & Obst.

The author states that placenta prævia is one of the four great obstetrical complications, and is

responsible for many deaths, recent statistics estimating the frequency of this condition as 1 in 160 labors.

He further states that it occurs more frequently in multiparæ than in primiparæ, the proportion being about nine to one, and the greater the parity, the greater the chance of placenta prævia. He classifies this condition as central or complete, partial or incomplete, and marginal; the greater mortality being found in the complete variety. The general mortality has been reduced since the introduction of antiseptic methods.

McDonald's statistics of 8,625 cases give a maternal mortality of 7.22 per cent of all cases, and a foetal mortality of 55 per cent. In central placenta prævia, the maternal mortality is 15 per cent, and the foetal mortality 71 per cent, while in partial placenta prævia the maternal mortality is 4.8 per cent and the foetal mortality 58 per cent.

The mortality varies considerably with different forms of treatment. The most successful form of treatment being the use of the Champetier de Ribes bag, or hystereurnyter, of large size—500 ccm. combined with Braxton Hicks' version and slow extraction. He does not believe that cesarean section should be done in this condition, as it only adds another danger to that already existing and one mortality to another; the only exception to this being in a primipara at full-term with a firm, undilated cervix, central placenta prævia, living baby, and good recuperative powers; this he states is a rare condition.

Post-partum hæmorrhage is one of the most feared complications after delivery of the child; lacerations of the cervix are not uncommon; phlebitis is another after-complication. He concludes by saying that early diagnosis is very important and that success of treatment depends upon immediate application and absence of violence and infection.

W. D. PHILLIPS.

Baughman, G.: Foetal Heart Sounds in Placenta Prævia. *Am. J. Obst.*, N. Y., 1915, lxxi, 253.

By Surg., Gynec. & Obst.

The serious consequences to the foetus in placenta prævia is due to the fact that that portion of the placenta which is detached from the uterus does not receive from the mother the oxygen that it should receive, and in consequence the foetus suffers with dyspnœa. The signs of foetal distress are cessation and some change in the heart-sounds.

The author believes that the well-accentuated sound gives a more favorable prognosis than the rapid, irregular sound. Comparison of heart-sounds can only be made when we examine the foetal heart at the point where the middle of the back or the chest of the foetus comes nearest the abdominal wall. From the child's standpoint delivery should be accomplished as soon as possible after the diagnosis of placenta prævia has been made.

C. H. DAVIS.

Winn, J. F.: Treatment of Placenta Prævia. *Virg. M. Semi-Month.*, 1915, xix, 525.

By Surg., Gynec. & Obst.

The author offers the following conclusions in regard to treatment of placenta prævia:

1. Before viability, both in domestic and hospital practice, Braxton Hicks' version is demanded.

2. After viability, provided the child is in good condition, the intra-ovular use of the elastic rubber bag, followed by internal podalic version, offers the best results for both mother and child. In domestic practice, when the bag is not available, Braxton Hicks' version again should be the treatment.

3. During labor in complete or partial placenta prævia, with great loss of blood, the child being either dead or possessing little chance of living, Braxton Hicks' version offers the best results for the mother.

4. Whenever Braxton Hicks' version is available, it should be followed by slow extraction. All efforts at rapid delivery by dragging the child through an undilated cervix will be followed by disastrous consequences to the mother.

5. For the milder varieties of placenta prævia, the marginal and lateral, simply puncturing the membranes is generally the only thing necessary to control the hæmorrhage.

6. The cervical and vaginal tampon is a makeshift at best, and, if used at all, should be employed under rigid aseptic conditions and other precautions well defined.

7. Cesarean section has a restricted place in placenta prævia. It should be chosen under the following conditions: (1) With the approach of full-term; (2) with the placenta covering a great part or the whole of the os; (3) when hæmorrhage is profuse, but not enough to make the mother a bad surgical risk; (4) with the child probably weakened, yet offering reasonable prospects of being saved; (5) when the cervix is in a condition suggestive of prolonged and difficult dilatation; (6) when there is a negative history of vaginal contamination; and (7) when there is the assurance of hospital technique being used.

W. D. PHILLIPS.

Stratz, C. H.: Treatment of Placenta Prævia (Behandlung der Placenta Prævia). *Ztschr. f. Geburtsh. u. Gynäk.*, 1915, lxxvi, 713.

By Surg., Gynec. & Obst.

Stratz recommends Braxton-Hicks' version unconditionally in the treatment of placenta prævia. He has treated 173 cases with the loss of only one mother, a mortality of .6 per cent. This death was due to embolism and cannot be attributed to the method. Seventy-seven of the children were delivered dead, 20 of them having died before labor began. Counting the latter the infant mortality was 45 per cent; without them 33 per cent.

The mortality of the mothers with the Braxton-Hicks' method is much less than any other; the mortality of the children is somewhat higher. Stratz thinks the mother's life should always be considered

first, particularly as placenta prævia almost always occurs in multiparæ, and the loss of a child is much less serious than the loss of the mother of the other children.

The tampon should never be used. Metreuryasis is superfluous when Braxton-Hicks' method is properly used and at the right time. Cæsarean section should be performed only when the mother earnestly desires a living child or when some complication indicates its use.

With this method the mother is seldom lost, and the more skilled the physician becomes in its use, the less frequently a child is lost. Tamponing at the beginning of delivery and overhasty extraction at the end of it should always be avoided.

Stratz thinks better results will be obtained by adhering strictly to one method than by changing from one method to another. A. Goss.

Widén, J.: The Sugar Content of the Blood in Eclampsia (Blutzucker und Eklampsie). *Monatsschr. f. Geburtsh. u. Gynäk.*, 1915, xli, 130.

By Surg., Gynec. & Obst.

Widén studied the sugar content of the blood in 8 cases of eclampsia by Bang's microchemical method. The curves and the case histories are given. He finds that intermittent hyperglycæmia is a characteristic symptom of eclampsia. The variations in the sugar content are very great. Very severe cases show little or no hyperglycæmia. This is in accord with the results of animal experimentation. Bang found that in rabbits, after the intravenous injection of 1 mg. adrenalin, there was a fall in the sugar content of the blood, while after subcutaneous injection of the same amount there was a marked rise.

If further investigation confirms Widén's results, which show that the cases of eclampsia with good prognosis show pronounced hyperglycæmia, Bang's method of determining the sugar in the blood will have a certain value in prognosis. The cause of the hyperglycæmia in eclampsia is not yet definitely settled. The amount seems to run parallel with the degree of the intoxication. Slight intoxication causes a slight rise in the sugar content; moderately severe intoxication, a moderately severe hyperglycæmia; and extremely severe intoxications, little or none. The hyperglycæmia disappears with the cessation of the intoxication.

In cases of albuminuria without eclampsia there was little or no hyperglycæmia, but in a case of pernicious vomiting of pregnancy the conditions were practically the same as in eclampsia, which would seem to indicate that the intoxication in pernicious vomiting is closely related to that in eclampsia. Further study of this point should be made.

Examination of the umbilical cord of infants immediately after delivery did not show hyperglycæmia. Sugar evidently then does not pass directly from the mother's blood to that of the fœtus. It must be formed either in the infant's body or in the placenta. Widén thinks that it is

probably formed in the placenta, showing that the latter is not merely a filter but has important biological functions to perform. A. Goss.

Gellhorn, G.: Three Cases of Extraperitoneal Cæsarean Section. *J. Am. M. Ass.*, 1915, lxiv, 196.

By Surg., Gynec. & Obst.

The patient, 35 years old, had her first confinement three years previous, at which time a dead child was extracted with forceps. She had had moderately severe contractions for about 48 hours and very strong and frequent pains for about 8 hours. The membranes had ruptured and repeated vaginal examinations had been made without rubber gloves. The indications for cæsarean section were a generally contracted pelvis of mild degree, a large head in the occipital posterior position, freely movable above the pelvis, and secondary inertia. The technique was as follows:

In extreme Trendelenburg position a mid-line incision was made from the symphysis to within one and one-half inches of the umbilicus. The lower uterine segment distended by the child's head presented. The peritoneum was lifted at its highest point and transversely incised for a distance of about two inches. The peritoneum and the bladder were then pushed toward the symphysis until the firmer connection between the bladder and cervix called a halt. A denuded oval with a diameter of about 5 inches thus resulted on the anterior surface of the lower uterine segment. The parietal peritoneum was stitched to the edges of this denuded oval, thus completely closing off the abdominal cavity. The lower uterine segment was incised and the child's face rotated into the incision. Forceps were applied with the concavity of the blades toward the symphysis. After delivery of the placenta and membranes, the uterine incision was closed by through-and-through stitches of chromic catgut and a superficial running suture of finer catgut. The uterus contracted promptly and there was practically no bleeding throughout the operation. The continuous stitch between the parietal and visceral peritoneum around the denuded area was removed and the bladder peritoneum pulled over the entire wound and sewed on the anterior surface of the uterus a trifle above its original insertion. The incision was closed in the usual way.

The patient went through an undisturbed and afebrile puerperium and left the hospital within two and a half weeks. Nine months later the uterus was of normal size, position, and mobility.

The other two cases reported were practically the same. In both a live child was delivered and the mothers recovered.

The author believes there is only one condition in which extraperitoneal cæsarean section does not offer advantages over the intraperitoneal method, and that is in placenta prævia. An incision through the lower uterine segment would open the enormously dilated blood sinuses, the inundation with blood would render orientation difficult, the lack

of contractile fibers would militate against prompt checking of hæmorrhage, and the friability of the tissues would favor tearing and prevent accurate adaptation.

With this single exception the extraperitoneal method not only possesses all the advantages of the ordinary cæsarean section and its modifications, but surpasses it in safety and freedom from post-operative complications. EDWARD L. CORNELL.

Lawrance, J. S.: Extraperitoneal Cæsarean Section; Report of Two Cases. *Surg., Gynec. & Obst.*, 1915, xx, 354. By Surg., Gynec. & Obst.

The author attempts to trace the development of the limitation of the indications of the classical cæsarean to the absolutely clean cases. He collected records of 28 cases of transperitoneal operations in suspected cases, with one maternal and one infantile death, and reports in detail two suspected cases in which infection was demonstrated.

Goodman, S. J.: Therapeutic Abortion; Indications and Methods of Procedure. *Ohio St. M. J.*, 1915, xi, 92. By Surg., Gynec. & Obst.

This paper deals with the law governing abortion, definition and history of the operation, the indications for same, its technique, the after-treatment, and prognosis.

As the law governing this operation makes its performance an offense unless undertaken to save the life of the mother, it is strongly advised that the practitioner always have the support of one or two other physicians as well as a signed statement from the patient. This emptying of the uterus before the period of viability has been done since the remotest antiquity in savage as well as in civilized lands. Before the time of Christ and among the Jews it was done as a therapeutic measure. The Catholic church forbids it for any cause or reason.

The various authorities which Goodman consulted give the following indications for performing therapeutic abortion. Included in this list are several offered by himself:

1. Contracted pelvis with a conjugata vera of less than 6 cm.
2. Hyperemesis gravidarum and other toxic affections.
3. Incarceration of a retroflexed gravid uterus.
4. Advancing tuberculosis as shown by loss of weight, evening fever, etc.
5. Heart-disease.
6. Diabetes and other constitutional diseases.
7. Diseases of the kidneys, especially if complicated by retinitis.
8. Other diseases which seriously jeopardize the mother, as Basedow's disease, leukæmia, pernicious anæmia, chorea, etc.
9. Diseases of the ovum, such as polyhydramnion, hydatidiform mole, death.
10. Cancer of the uterus and other malignant growths of the uterus and surrounding tissues.
11. Insanity, idiocy.

12. Hæmorrhage during the early months of pregnancy.

13. Eclampsia.

14. Sometimes pregnancy following rape may possibly present another indication for this procedure.

The gravity of this operation should always be borne in mind. It should never be done except in a good hospital and under the strictest aseptic precautions. After the first eight weeks, twenty-four-hour dilatation with a gauze pack may be necessary before emptying the uterus. The uterine contents should be emptied by means of a blunt curette or polypus forceps, and the cavity packed with iodine gauze. Vaginal or abdominal cæsarean section are here preferred by some men. The after-treatment consists of keeping the patient quiet in bed for from a week to ten days; no douches; vulvar irrigations with a mild antiseptic solution; of keeping the bowels open; and allowing the patient to use a commode so as to promote drainage. With very careful management this operation carries a very small mortality, but it must always be undertaken with great care. C. D. HOLMES.

Danforth, W. C.: Ovarian Tumors in Pregnancy; Report of a Case of Solid Tumor. *Surg., Gynec. & Obst.*, 1915, xx, 319. By Surg., Gynec. & Obst.

Danforth reports the case of a woman 32 years of age, pregnant 3 months, from whom was removed a solid tumor of the left ovary weighing 292 grams. The tumor when microscopically examined proved to be a fibromyoma. The woman went on to term without miscarriage.

The more important publications upon this subject are reviewed and statistics quoted. McKerron and Puech and VanVerts find that 2.5 per cent of ovarian tumors are solid, while Jetter gives the percentage as 6.8.

The dangers to the pregnant woman are discussed, torsion of the pedicle of the tumor, torsion of the uterus, and rupture of the cystic tumors, being mentioned as the most important complications of pregnancy.

As to treatment, the immediate removal of the tumor if recognized during pregnancy is advised. A large mass high in the abdomen is looked upon as less dangerous than a smaller one in the pelvis. The removal of these tumors by abdominal incision is advocated in preference to vaginal section during pregnancy, as the statistics show that there is much less danger of miscarriage after laparotomy than after vaginal section. E. P. Davis gives the percentage of abortion in the latter procedure as 49 per cent, while the figures of the various writers quoted as to the danger after abdominal section vary from 17 to 22.4 per cent.

If the woman is in labor and is not in condition for safe laparotomy it is advised to push the mass up out of the pelvis and deliver vaginally, or, if this be impossible, to puncture or incise and drain the cyst, deliver through the vagina, after which the sac

should be removed by colpotomy or abdominal incision within 24 hours. If the case be clean the woman may be delivered by cæsarean section and the tumor removed at the same time.

The importance of the early recognition of these tumors in the pregnant woman is urged. In case of torsion of the pedicle or rupture of a cyst during pregnancy immediate operation is advised.

Albrecht, H.: Etiology of Chorea Gravidarum (Zur Ätiologie der Chorea gravidarum). *Ztschr. f. Geburtsh. u. Gynäk.*, 1915, lxxvi, 677.

By Surg., Gynec. & Obst.

Albrecht reports a case of moderately severe recurrent chorea during pregnancy, which was cured within 24 hours by the injection of 20 ccm. of normal pregnancy serum, after the usual symptomatic treatment had been given 3 weeks without any effect.

This tends to confirm the theory that chorea during pregnancy belongs to the group of pregnancy toxicoses, the intoxication involving the central nervous system. It is still unexplained why the toxin should affect the subcortical center, but it seems evident that the virus is not exogenous but endogenous. This theory is further confirmed by the autopsy findings of Crespigny and Wilson. In fatal cases of chorea of pregnancy they found changes in the liver and kidneys completely analogous to those in severe pregnancy toxicosis.

The conception of chorea as a pregnancy toxicosis is important with reference to treatment. Statistics given in Pinele's recent monograph show that abortion, which is the usual treatment in chorea of pregnancy, gives a mortality of 54 per cent. Any treatment would be welcome which would reduce this high mortality. Albrecht believes, however, that serum treatment will be effective only in moderately severe early cases, before severe and irreparable organic changes have been produced by the toxin.

A case of chorea in a young girl is also described, which seems to show that chorea minor is also an auto-intoxication of the central nervous system, because of dysfunction of the glands of internal secretion in the period immediately preceding puberty. Simonini concluded from clinical and experimental observation that chorea minor was due to insufficiency of the parathyroid, and both he and Giambi noted marked improvement after administration of parathyroid extract. This is only a hypothesis, but it would seem that chorea minor is due to transformations in internal secretion just before puberty and that the connection is similar to that seen in the chorea of pregnancy, which is due to the changes produced by pregnancy in the maternal organism.

A. Goss.

Glynn, E., and Briggs, H.: Symmetrical Cortical Necrosis of the Kidney in Pregnancy. *J. Pathol. & Bacteriol.*, 1915, xix, 321.

By Surg., Gynec. & Obst.

The authors report in fullest detail a case of symmetrical cortical necrosis of the kidneys in

pregnancy. This is the thirteenth case in the literature. The lesion apparently is found in its typical form only in pregnancy, a condition leading to toxæmia, as indicated by eclampsia, vomiting, albuminuria, etc. The authors' conclusions best formulate the ideas advanced in this case report:

1. Typical symmetrical cortical necrosis of the kidney is apparently invariably associated with pregnancy.

2. The lesion is due to thrombosis of the interlobular arteries, their afferent branches and glomerular capillaries, and begins in the distal ends.

3. In this case the thrombi in the distal ends and middle of the interlobular arteries, their branches, and glomerular capillaries consisted mainly of platelets; fibrin was relatively scanty and in filamentous form. The thrombi in the proximal ends of these vessels consisted mainly of fibrin in hyaline form; many erythrocytes and leucocytes were also present; platelets were very scanty.

4. It is extremely probable that platelets formed the chief portion of the thrombi in other recorded cases, but their presence was overlooked.

5. The deposition of platelets was the primary cause of the thrombus and preceded the deposition of fibrin. It was the result of injury to the vascular endothelium.

6. This injury was probably caused by an endotheliolytic toxin allied to the group of toxins found in pregnancy, which may produce eclampsia.

7. A variable amount of sclerosis of the renal arteries occurred in six of the thirteen cases. It probably caused a predisposition to thrombosis by causing slowing and other irregularities in the circulation, or by injuring the endothelium or rendering it more susceptible to injury.

CAREY CULBERTSON.

Jonas: Kidney Function in Normal and Pathological Pregnancy (Nierenfunktion in der normalen und pathologischen Schwangerschaft). *München. med. Wchnschr.*, 1914, lxi, 1405.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

A description is given of Schlayer's test for kidney function. Among a number of normal and diseased pregnant women who were examined by this method, in most of them, even those that were found normal clinically, there was found to be some injury of the kidney. There were alterations in the blood-vessels, but there was no involvement of the tubules. In a case of eclampsia during pregnancy a typical picture of vascular hyposthenuria was found.

RUHEMANN.

Wallace, C. J.: Ruptured Appendix at Full-Term Pregnancy. *J. Am. M. Ass.*, 1915, lxiv, 739.

By Surg., Gynec. & Obst.

The patient had had recurrent attacks of appendicitis for two years, all very slight, and none during the previous eight months. When the author was called to attend her at childbirth, thorough examination was made; the cervix showed a slight degree

of dilatation, about three-fourths of an inch; but on closer survey, there was felt through the wall of the vagina what seemed like an abscess located in the region of the appendix. The ground was covered very thoroughly and a diagnosis made of suppurative appendicitis with possible rupture of the appendix. Two days later she was operated upon. A complete appendectomy was performed and pus cleaned out, which had formed freely about the much enlarged vessels and ligaments, which are, at this stage of pregnancy, far from the general size. Hoping to avoid later trouble, rubber tube drains were placed in the cul-de-sac and in the groin. The incision was closed tightly around the drains, especial care being taken to close the fascia so as to get a good union and avoid separation during the severe strain which was sure to come at the time of childbirth.

EDWARD L. CORNELL.

Fair, H. D.: Better Obstetrics. *J. Indiana St. M. Ass.*, 1915, viii, 67. By Surg., Gynec. & Obst.

The author dwells upon the necessity for better obstetrics. He contends that other things being equal, a woman should be better mentally and physically as well as happier and healthier after the birth of her first baby; and when this is not the case, he thinks it is due largely to the fact that the obstetrician has either not had a chance or has failed through ignorance or carelessness as to his duty. The obstetrician must be versed not alone in his particular science and art but he must be an internist, surgeon, and pediatricist. Neither is it enough to lead a woman safely to the completion of her pregnancy, deliver her, then dismiss her after two or three calls made during the following week, and leave her to the care of neighbors or relatives who are ignorant of the true state of affairs and who have no sympathy with the "new fangled" notions.

A feat of momentous importance will have been accomplished when we have educated the public to the extent that pregnant women will realize that it is to their interest and that the best results can only be obtained by placing themselves under the direct supervision of a good physician early in the period of gestation. He also contends that the modern hospital is the ideal place for the parturient woman. In attending such a patient he advises that the physician be equipped with a complete obstetrical outfit, with all necessary articles sterilized; then get the patient in the best possible condition for her ordeal and render her the best service possible.

C. D. HOLMES.

LABOR AND ITS COMPLICATIONS

Jellett, H.: The Treatment of the Second Degree of Pelvic Contraction. *Surg., Gynec. & Obst.*, 1915, xx, 158. By Surg., Gynec. & Obst.

The author believes that the advantages of the induction of labor are not very numerous, and principally consist in the fact that it is comparatively

easily carried out, and that it usually results in the birth of a living child. On the other hand, the arguments against it are: (1) that it is extremely easy to infect the patient during the process of induction; (2) that all methods of induction recommended up to the present time are uncertain in their action and sometimes mean repeated manipulation and considerable delay; and (3) that the premature child is very liable to die in consequence of its feeble condition.

In favor of cesarean section are a considerable number of points. In the first place it is very simple and easily carried out. If it is done early in labor, or at the beginning of labor, or even before labor has begun, it is almost free from risk. With it there is no such thing as a vaginal or perineal laceration; recovery is rapid; there are none of the pains and discomforts of a prolonged labor; and the foetal prognosis is usually extremely good. Lastly, it can be performed in subsequent labors, probably as often as is required, provided no abdominal infection occurs. In fact, it possesses only two disadvantages, but these are serious. If we are to get all the benefits of cesarean section without the dangers, it must be performed either before labor begins or early in the first stage, and consequently it is not possible to give the patient an opportunity of delivering herself. The second disadvantage is that when once a cesarean section is done on a patient, on account of contracted pelvis, there is no logical reason why it should not have to be done in every subsequent pregnancy. In short, one may say, "Once a cesarean section always a cesarean section." This is a serious disadvantage: (1) because it is not always possible to measure a pelvis exactly enough to be able to say that it falls positively into a certain degree, and (2) even if it can be measured exactly, it is not possible to estimate correctly the actual size of the foetal head. Practical experience shows that in the second degree of pelvic contraction or in borderline cases between the first and second degree it may be entirely impossible to deliver through the vagina a living child at one labor, whereas in the next labor, with stronger uterine contractions, and greater molding of the head, it is possible to effect delivery. If, however, a woman is to be delivered by cesarean section the operation must be done at an early period of labor, so losing all possibility of spontaneous or instrumental delivery.

The third possible line of treatment of these cases is pubiotomy. In favor of this operation are the facts that it is a smaller procedure than cesarean section in a favorable case; that its performance can be postponed till the last possible moment, when a positive indication for delivery on behalf of either the mother or the child arises, so that every opportunity of spontaneous delivery or of delivery by the forceps is afforded; and that it improves directly the prognosis of subsequent labors because it causes a permanent increase in the size of the pelvis. On the other hand, the oper-

ation possesses certain disadvantages. In the first place the antecedent labor is prolonged and painful, and during it the child may possibly die, owing to compression, even though it is most carefully watched. Further, it is always liable to cause laceration of the vagina and possible injuries to surrounding parts, and, consequently, in unfavorable cases it may prove to be a much more difficult operation than cæsarean section. The author is of the opinion, however, that the advantages are considerably in excess of the disadvantages. First, because the fact that the operation can be performed late in labor gives the patient every opportunity of escaping operation, and, second, on account of the extremely beneficial effects of pubiotomy on subsequent labors.

Four tables show all cases in which pubiotomy has been performed at the Rotunda Hospital by the author or his predecessor, Hastings Tweedy. The first showed in a general way the essential facts of all the cases. The second showed the nature of the different complications occurring during the performance of pubiotomy or subsequently. In only 4 out of the 19 cases did anything that could be regarded as a serious complication occur, and in all the 19 cases the ultimate recovery was perfectly satisfactory. Two cases demonstrated that failure of union of the bone at the site of incision in no way interfered with locomotion. The third and fourth tables showed the difference between labors occurring previous to the performance of pubiotomy and labors occurring subsequent thereto. It was seen that whereas in 29 labors previous to pubiotomy only 3 children were delivered alive spontaneously; subsequent to pubiotomy in 15 labors 8 children were delivered alive spontaneously.

In conclusion, the author offers the following opinions as to the treatment of the second degree of pelvic contraction:

1. Pubiotomy is the operation of choice, unless there are special circumstances in the case or special complications present.

2. Pubiotomy is specially indicated in the young multipara, because, owing to previous labor, the vaginal canal is dilated and lacerations are unlikely to occur, and because of the effect of the operation on subsequent pregnancies.

3. On the other hand, cæsarean section is more suitable in the elderly primipara, because vaginal laceration is more likely to occur, and because it is not so necessary for the woman to take account of further pregnancies.

4. Premature labor is indicated only under special conditions which render either of the foregoing operations impossible or inadmissible.

Jardine, R.: The Treatment of Impacted Breech Cases. *Glasgow M. J.*, 1915, lxxiii, 193.

By Surg., Gynec. & Obst.

The author considers that kind of impaction in which the legs are flexed and the feet of the child are high up on its chest. In such cases the mem-

branes usually rupture early, before there is much dilatation, and a marked retraction ring forms. This ring grasps the child's body beneath the knees and also forms a very distinct ledge; and with each uterine contraction the ring contracts and prevents descent. In primiparæ the fetal mortality in such cases is over 20 per cent.

Jardine's method of delivery is as follows: When such a condition is recognized, the patient should be anæsthetized and the os fully dilated. The flattened-out hand should then be passed up along the front of the child and the foot grasped. The leg is then swung inward toward the front of the child and gradually brought down past the retraction ring. Attention is called to the importance of conducting this manipulation very carefully, as the lower uterine segment is very thin and there is risk of its rupture. After the leg is brought down traction upon it will bring the body down, and the child is then delivered in the usual method, an endeavor being made to keep the head flexed and the arms down. He condemns the use of forceps or traction by means of a fillet in such cases. A. H. SCHMITT.

Vake, R. T. Ia: Dilatation of the Cervix by Means of Bags. *J.-Lancet*, 1915, xxxv, 94.

By Surg., Gynec. & Obst.

Some obstetrical conditions demand artificial aid in dilatation of the cervix, as dry labor, prolonged labor, prolonged gestation, previous difficult labors, eclampsia, placenta prævia, endocarditis, tuberculosis, albuminuria, and toxæmia of pregnancy.

Various methods have been devised to assist nature in these conditions, but the Voorhees bag is perhaps the best to use. It is a thin canvas, rubber-covered, conical bag, so constructed as to allow traction on the tube leading from the small end. Strict asepsis must be observed in introducing this bag. It is rolled up parallel to its long axis and grasped with a long pair of sponge-holders. After being inserted inside the cervix it is filled with one-half per cent lysol or with sterile water, the tube tied and placed in the vagina. While sepsis is not common, the hospital offers the safest environment for this procedure.

C. D. HOLMES.

Klipstein, G. T.: Some Suggestions for Mitigating the Pain and Accelerating the Delivery in Parturition. *Virg. M. Semi-Month.*, 1915, xix, 606.

By Surg., Gynec. & Obst.

The author divides the causes of prolonged labor into three classes: (1) deranged conditions of the nervous system; (2) lack of proper expulsive power on the part of the uterus; (3) improper relaxation of the uterine sphincters.

1. The muscular system of the uterus, instead of contracting and relaxing normally, approaches a state of clonic spasm, and much suffering with little progress results. For this condition the author recommends the use of $\frac{1}{4}$ gr. morphia and $\frac{1}{150}$ gr. of atropia, repeated until their influence is noted. The labor is completed with chloroform anæsthesia.

2. When improper expulsive power on the part of the uterus exists, Klipstein again uses morphia and atropia. If practically no progress has been made, $\frac{1}{4}$ gr. of morphia is given and repeated if necessary.

3. With improper relaxation of the uterine sphincters the author uses morphia and atropia freely. The patient is kept constantly in a drowsy condition and allowed to sleep between pains. Artificial dilatation is instituted by the introduction of one, two, or three fingers and furthered by chloroform anæsthesia. The use of forceps should be postponed as long as possible, as it is in these cases that the most severe lacerations occur.

In an experience covering 22 years the author declares he has never seen any ill effect of these drugs on the baby at birth. He remarks, however, that resort has occasionally been made to methods for arousing respiration in the newborn when these drugs have been used, but that similar procedures have been necessary in prolonged labors conducted without any medication.

He deprecates the use of pituitrin when the pains are frequent and strong and the os not dilated. He considers that it produces its best effects in the presence of deficient muscular power of the uterus and abdominal wall with an os fully dilated or dilatable.

F. C. IRVING.

Polak, J. O.: A Study of Twilight Sleep. N. Y. M. J., 1915, ci, 289. By Surg., Gynec. & Obst.

The author states at the outset that there are several questions regarding twilight sleep that obstetricians will have to settle. They are: (1) What is really meant by twilight sleep? (2) Has twilight sleep any place in rational obstetrics? (3) Can anything be gained for the patient by its use and, if so, do the advantages gained compensate for the possible dangers to the child?

The favorable points regarding twilight sleep are:

1. Ninety per cent of all labors can be successfully rendered painless with morphine-scopolamine anæsthesia.

2. Maternal morbidity and mortality are not increased by twilight sleep.

3. The first stage of labor is materially shortened.

4. Cervical dilatation is more complete and, therefore, cervical tears less frequent.

5. Third-stage inertia is not increased; post-partum hæmorrhage or difficulty in separation of the placenta has not been noted.

6. Dry labor is made shorter and less exhausting by twilight sleep.

7. With twilight sleep, borderline disproportions may be given the test of labor without exhaustion to the patient.

8. The strain of labor in cardiac disease and tuberculosis is very materially lessened by twilight sleep.

9. Twilight sleep is particularly indicated in highly nervous and physically unfit primiparous women.

The disadvantages of twilight sleep may be summed up as follows:

1. Possible asphyxiation and narcotization of the child.

2. Possible dangers to the mother, such as idiosyncrasy to morphine or scopolamine, causing delirium or coma; arhythmic respirations; diminished kidney secretion; prolongation of the labor; uterine atony, and perhaps post-partum hæmorrhage.

3. Prolongation of the second stage of labor.

Some very definite and explicit suggestions for the successful administration of twilight sleep are given. Individualization (dosage) with constant intelligent observation of the mother (pulse, respiration, pupils, etc.), the child (heart), and the progress of labor constitute the most important of these. Only through considerable experience can twilight sleep be administered successfully, because every case is a law unto itself. The author emphatically states that twilight sleep is an assured fact, but adds that for the present at least the method should be utilized only by the expert in a well-appointed maternity hospital.

HARVEY B. MATTHEWS.

Brodhead, G. L.: Twilight Sleep in Obstetrics.

Post-Graduate, 1915, xxx, 87.

By Surg., Gynec. & Obst.

In a series of 46 cases at the Harlem Hospital treated by the method outlined by Siegel, 35 patients showed good results both as to analgesia and amnesia; in 8 cases the results were fair, and in 3 there were no results at all. There were 8 operative cases: 1 for hydrocephalus, 6 were forceps operations, and 1 breech extraction. There were no complications affecting the mothers. Thirty-one of the babies cried immediately after birth, 14 cried after some manipulation; several babies required hot and cold baths and artificial respiration.

The forty-sixth case, which was a primipara, after three doses had been given gave birth to a partially asphyxiated child, more than an hour being required to stimulate the respiration so that the child breathed fairly well; thirty-two hours after birth the child died, the respiratory center apparently being disturbed. Autopsy showed venous engorgement of the brain and all the viscera, but the cause of death was undetermined; the author, however, states that, in his opinion, the use of twilight anæsthesia was the cause of death. Because of similar results, and also because of the excitement produced in some patients, the author has abandoned the use of the Siegel plan of treatment.

WILLIAM D. PHILLIPS.

PUERPERIUM AND ITS COMPLICATIONS

Bishop, H. D.: Etiology of Puerperal Infection.

J. Am. Inst. Homœop., 1915, vii, 912.

By Surg., Gynec. & Obst.

Bishop discusses the etiology of puerperal infection from the standpoint of auto-infection chiefly, and the causes predisposing to such infection.

Exhaustion from protracted labors makes for lowered resistance to infection; hence we should not allow the second stage of protracted labor to continue longer than two hours in a multipara or four hours in a primipara. In the third stage he suggests the use of gentle stimulation by massage of the uterus between contractions until the placenta is within the vagina, when by gentle fundal pressure the mass is easily delivered. By this method there is a minimum blood loss and little danger of membranes being torn. He uses ergot freely to prevent the formation and retention of blood-clots within the uterus. Retention of vaginal discharges with consequent infection is avoided if the patient is allowed to lie on her back only a third of the time, and to get up to use the commode after the first twenty-four hours. C. D. HOLMES.

MISCELLANEOUS

Gruss, J.: Abderhalden's Serum Reaction (Die Abderhalden'sche Serumreaktion). *Časop. lékař. česk.*, 1914, liii, 569.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author describes in detail the processes of examination with their theoretical foundations and emphasizes the unreliability of the dialyzing thimble. He used the dialyzing method in twenty-one puerperal women with positive results in each case. Positive results were also observed in some inflammatory processes and tumors. In eclampsia no noteworthy differences in the reaction were observed. It is not possible to make a certain diagnosis by the reaction without clinical and manual examination, especially in doubtful cases, and Abderhalden has never claimed that it was possible. PRUSKA.

Vogt, E.: Indications and Contra-Indications for Hypophysis Preparations in Obstetrics (Indikationen und Kontraindikationen für die Anwendung der Hypophysenpräparate in der Geburtshilfe). *Ztschr. f. Geburtsh. u. Gynäk.*, 1915, lxxvi, 746.

By Surg., Gynec. & Obst.

Vogt has used extracts of hypophysis systematically since September, 1911, and during that time has had over 7,600 deliveries. He finds extract of hypophysis indicated at the end of the first and throughout the second stage of labor, especially in secondary atony. It is also indicated in primary atony, as in infantilism, old primipara, hydramnios, constitutional diseases, and premature rupture of membranes, though in these cases the effect may not be so marked. He has found it of value also in contracted pelvis of the first and second degrees.

The necessity for forceps operations has been greatly decreased since the introduction of pituitrin. In febrile labor cases operation is dangerous on account of infection and may often be avoided by the use of pituitrin. Indications for cesarean section and for hebstomy and for subcutaneous symphyseotomy have been modified by pituitrin. They are only indicated when spontaneous delivery does

not take place after repeated injections of extract of hypophysis. Even in metreurysis the contractions are increased by pituitrin, so that the metreurynter is discharged sooner and the danger of infection thereby decreased. After hebstomy and symphyseotomy, spontaneous delivery is hastened by the administration of pituitrin. Vogt has used pituitrin to hasten delivery of the second of twins, but Carl Heil reports a case in which pituitrin seemed to contract the cervix under such circumstances rather than to dilate it. Fries and Robert Stern have used pituitrin to induce labor at the end of pregnancy. Frequent and large doses are necessary for this. Cases have been reported in the literature where it was given to induce labor in cases that had gone beyond term in order to avoid excessive growth of the child. Artificial premature delivery, however, cannot be induced by the use of pituitrin. There have not been many reports of the use of pituitrin in placenta prævia. Good results have been reported by Hofbauer, Trapel, Hauch, and Leopold Meyer.

Vogt thinks it should be used very cautiously after metreurysis and Braxton-Hicks' version, because there is danger of too violent contractions and fracture of the cervix. It is used prophylactically in cesarean section to control hæmorrhage from the uterine wound. Its use is indicated in the third stage of labor, under the following conditions:

Prophylactically, where there is any danger of post-partum hæmorrhage, and in all artificial deliveries in which there is danger of hæmorrhage. Liepmann also recommends it when the second of twins is delivered and immediately after delivery in hydramnios and placenta prævia. It should be used therapeutically in cases of post-partum hæmorrhage. Atony of the uterus is best overcome by intramuscular injection of pituitrin, or in very severe cases, intravenous injection.

Pituitrin is contra-indicated in the third stage only in nephritis or arteriosclerosis with high blood-pressure.

Pituitrin is contra-indicated in general in kidney disease and eclampsia. It is not contra-indicated in pure heart weakness, but if there is any suspicion of coronary sclerosis its use should be avoided, as it acts on the walls of the artery. It is strictly contra-indicated if there are any signs of threatened rupture of the uterus. Several authors say that threatened rupture of the uterus is the only contra-indication to its use. Vogt himself thinks the danger in its use is slight if it is correctly employed. There is no cumulative effect and it can be repeated at intervals of one to two hours throughout delivery. Cases of collapse have been observed, but only when it was given intravenously and too rapidly. In a few cases stricture of the internal os and tetany of the uterus have occurred. Some authors have reported atony after delivery when pituitrin was used in the second stage.

There may be some danger for the child if pituitrin is used when not indicated or in too large quantities.

The foetal heart-sounds are always slowed. Pituitrin should be used only if the child's heart is perfectly normal. He has observed cases where children were delivered dead or in conditions of severe asphyxiation, but in no case could this be attributed to the use of pituitrin. There had always been some primary injury of the child by too long delivery, fever, or some umbilical cord complication.

A. Goss.

Newell, F. S.: *The Blood-Pressure During Pregnancy, Based on Observations on 450 Cases from the Records of the Committee in Charge of the Prenatal Work Carried on by the Women's Municipal League of Boston.* *J. Am. M. Ass.*, 1915, lxiv, 393. By Surg., Gynec. & Obst.

The study of the records of 450 cases shows definitely that a considerable number of patients have a temporary rise in blood-pressure during pregnancy without the development of other symptoms, as is found in patients under other conditions. The significance of this rise in blood-pressure can only be ascertained by a frequent study of the blood-pressure in a large number of cases. In other cases the rise in blood-pressure was followed by the appearance of albumin, a combination of which has been shown to be a definite indication of the development of toxæmia. In only one case, however, did convulsions develop, the other cases yielding to treatment. Thirty-nine cases showed slight traces of albumin in the urine, but no changes in the blood-pressure. As the urine was not obtained by a catheter, the source of the albumin is unknown, but in the majority of the cases it was probably due to contamination of the urine by leucorrhœal discharge.

To judge from these cases, the presence of a slight amount of albumin, if not accompanied by a rise in blood-pressure, is negligible. Eleven patients showed albumin with a high blood-pressure, all of these being, presumably, more or less toxæmic. Five patients showed a blood-pressure of 140 or over throughout the period during which they were under observation. Only one of these patients developed albumin at any time during pregnancy and all passed through labor normally, which would tend to prove that persistent high blood-pressure in the absence of other signs is not necessarily a dangerous symptom, although it should always arouse suspicion and call for increased watchfulness; whereas, as was shown in other cases in this series, a rise in blood-pressure from a low point is not infrequently followed by the appearance of albumin and the development of symptoms of toxæmia, and is more significant than a high pressure throughout.

EDWARD L. CORNELL.

Chotzen, T.: *Diagnostic Value of the Antitrypsin Content of the Blood Serum* (Über die diagnostische Bedeutung des antitryptischen Titers des Blutserums). *Ztschr. f. Geburtsh. u. Gynäk.*, 1915, lxxvi, 859. By Surg., Gynec. & Obst.

It has been demonstrated that the antitrypsin content of the blood serum is increased in certain

conditions, as pregnancy, carcinoma, nephritis, Basedow's disease, etc. Chotzen reviews the literature on the subject and gives a series of tables showing her results in various conditions, as early and late pregnancy, the puerperium, carcinoma, and various pathological conditions of the genital organs. She concludes from her results that if there is no increase of the antitrypsin content in cases of questionable pregnancy or suspected carcinoma it decides the diagnosis negatively. A positive antitrypsin reaction must be interpreted cautiously in connection with other symptoms and especially with the Abderhalden reaction to confirm the diagnosis.

There are many opinions as to the true nature and cause of the antitryptic action of the serum. Many authors believe it is due to a true antiferment content in the serum. This antiferment is utilized by the body as a protection against the tryptic ferments circulating in the blood. Other authors think that the antitryptic action is not due to a true antiferment but is only caused by increased catabolism of albumin. Blood serum, even under normal conditions, is to a certain extent a solution of the products of disintegration of albumin, and therefore has a certain inhibitory effect on the action of a tryptic ferment on albumin; but any condition which increases albumin catabolism in the body, as pregnancy, carcinoma, Basedow's disease, or nephritis, must increase the concentration of disintegrated albumin in the blood serum, and this is manifested by an increased inhibition on the action of trypsin.

Schwarz believes that the active antitryptic principle in the serum is a lipid substance, because the serum loses its inhibitory action ferment by ether extraction. The increased antitryptic content of the serum is caused by an increased content in organic lipoids. Becker suggests that antitrypsin is not a definite substance, but that the action is due to all the chemical changes which take place in the composition of the blood, just as an inhibitory action on tryptic ferments may be produced by various chemical agents *in vitro*.

There is no uniformity of opinion as to the nature of this interesting phenomenon, but these theoretical considerations are of no practical significance. The reaction can, with certain limitations, be used as an aid in diagnosis.

A. Goss.

Moran, J. F.: *The Endowment of Motherhood.* *J. Am. M. Ass.*, 1915, lxiv, 122.

By Surg., Gynec. & Obst.

That thousands of women die every year from puerperal infection and accidents of childbirth, that many thousands more pass into the care of gynecologists, and that one-third of the blindness in the world is the result of ophthalmia neonatorum are true and convincing proofs that obstetrics is woefully lacking in the careful study and attention it so rightly deserves.

Many of the schools are inadequately equipped for the teaching of obstetrics properly, only one

having an ideal clinic; many of the professors are poorly prepared for their duties and have little conception of the obligations of professorship; many of the teachers admit that their students are not prepared to practice obstetrics on graduation; one-half of the answers state that ordinary practitioners lose proportionately as many women from puerperal infection as do midwives and that reform is urgently needed and can be more readily accomplished by radical improvement in medical education than by the almost impossible task of improving midwives.

It is the author's firm conviction that the next move in the line of progressivism should be the revision of the curriculum. In recent years surgery has been featured more and more at the expense of the other branches, particularly obstetrics. Much of the time spent in the amphitheater could be more profitably devoted to the general and obstetric wards.

A potent factor in much of the inferior and middlesome midwifery practice owes its inception to the faulty and inadequate training of the student under the direction of an inexperienced interne, or his initiation into the outdoor confinement cases without proper supervision and facilities. No surgeon would elect to perform an operation except under the most favorable environment, and no obstetrician should permit his students to be trained in a haphazard and indifferent manner.

The college curriculum should be revised so as to fit men to do the greatest good to the race. Obstetrics and general medicine should be intensively taught in the graduate course, and the practice of surgery and gynecology, which are largely elective, should be restricted to post-graduate teaching.

Obstetrics is the most arduous, least appreciated, least supported, and least compensated of all the branches of medicine. Its dignity and importance will never be recognized as long as the incompetent female and male midwives with their bargain-counter inducements are placed on an equality with the trained practitioner. That statistics may show that the results of the general profession are little if any better than those of the midwives' is beside the question and proves that the standard of teaching obstetrics is low, very low, and needs to be radically improved.

EDWARD L. CORNELL.

Dorland, W. A. N.: Some Rare Fœtal Teratisms, with Illustrative Cases: Sympodia, Craniopagus, and Acephalus. *Surg., Gynec. & Obst.*, 1915, xx, 342.

By Surg., Gynec. & Obst.

Dorland reports 3 exceedingly rare monsters. The first was a case of uromelia or sympus monopus, one of twins, its fellow surviving. Since 1900, 20 sympodial monsters, including this specimen, have been recorded in the world's literature. Of these, 11 were true sirens (sympus apus), 7 were examples of sympus dipus, and only 2 were uromelic monsters.

The author's second case was an example of

craniopagus parietalis, the faces looking in opposite directions — a twisting of 180°. Since the time of St. Hilaire a few cases of craniopagus occurring in animals have been noted — especially in chickens. Of the 25 cases of craniopagus reported in the world's literature, 8 have survived; 5 for varying lengths of time, and one is surviving up to date.

The author's third specimen was a typical sample of acephalus thorax, also occurring in a twin labor, the autosite being stillborn. These monsters are wrongly termed acardiaci, since a large number of them have presented hearts in varying degrees of development. Dorland suggests that they should be grouped under the name of cryptocephalus, since the skiagram shows, in his specimen, not only ribs, but cervical vertebræ and a very distinct cranium, the whole being surrounded by a large mass of fibrous connective tissue. This is probably a unique case in obstetrical literature.

Grinnan, St. G. T.: The Caring for Premature Infants. *Virg. M. Semi-Month.*, 1915, xix, 528.

By Surg., Gynec. & Obst.

Comparatively few pediatricians now use the incubator. A fresher and better air than has been practical to obtain with the incubator is necessary. A padded crib or box with hot-water bags on both sides or even under the infant supply the necessary heat. He states that the electrotherm is very satisfactory for supplying the heat. The temperature in the box should be 85 to 90° F. and in the room 72 to 77° F. The infant should be well protected with cotton, and four or five hours after birth the first bath may be given. Warm olive oil may be used, followed by water at a temperature of 100° F. Later, sponge baths are better than tub baths, very fatty soap being preferred. When breast milk cannot be obtained, whey is very useful; or evaporated milk may be used, the infant being fed with a dropper or a Breck feeder.

W. D. PHILLIPS.

Barbier, H., and Cléret, M.: Atrophy in Nurslings and Congenital Lesions of the Liver in the Newborn (*L'atrophie des nourrissons et les lésions congénitales du foie des nouveau-nés*). *Arch. de méd. d. enf.*, Par., 1914, xvii, 401.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Atrophic infants who have never had intestinal disease are very difficult to cure in spite of the most rational feeding. The deep-seated causes of such atrophies lie in congenital changes in various organs, such as the liver, pancreas, intestines, thyroid, thymus, muscles, lungs, etc.

The authors have studied these changes in the liver and give case histories, microscopical findings, and histological pictures. In some cases they found sclerosis of the vessels and fatty degeneration of the liver-cells due to a congenital syphilis or tuberculosis without demonstrable clinical symptoms. In other cases, in which leucocytic infiltration was found, septic disease seemed to be the cause of this and the resulting atrophy.

SAMELSON.

GENITO-URINARY SURGERY

KIDNEY AND URETER

Ach, A.: The Operative Treatment of Floating Kidney (Über die operative Behandlung der Wanderniere). *Beitr. z. klin. Chir.*, 1914, xciii, 262.
By Surg., Gynec. & Obst.

The author reviews the different methods employed in fixing a floating kidney and discusses their shortcomings. He presents a method which he devised, in which the kidney is exposed by means of the Simon loin incision and is delivered. Then an incision 7 cm. long is made on the anterior as well as on the posterior surface, extending only through the fibrous capsule. Between these two incisions the capsule is separated bluntly from the renal parenchyma, an additional incision over the convexity being used to aid in the separation. Then a strip of fascia lata 20 cm. long and 6 cm. wide is brought underneath the capsule from one incision through the other and fixed to the incision in the capsule. Thus the kidney retains its complete capsule and two bands—one anterior and one posterior—are available for anchoring the kidney. These bands of fascia are brought through the fascia lumbrosacralis and, after the kidney is replaced in its normal position, are sutured to the deep as well as to the superficial lumbrosacral fascia.

The author has employed the method in 17 cases, and in each case the kidney has retained its fixed position.
L. A. JHUNKE.

Baldwin, J. F.: Dermoids of the Kidney. *Surg., Gynec. & Obst.*, 1915, xx, 219.
By Surg., Gynec. & Obst.

In addition to his own case, Baldwin reports five others which he has found in the literature. The classical case of Sir James Paget he dismisses briefly, as that was a case of dermoid of the kidney in a sheep. His own case was in a young girl of eighteen, who had had an abdominal tumor on the right side since she was a year or two old. It had been growing, keeping pace with her growth, but of late more rapidly. It was very movable, and was supposed to be connected with the ovary until she was under an anæsthetic, when it was decided that it was connected with the kidney. It was removed by a transperitoneal nephrectomy, and was found to involve the lower half of the kidney. It presented a number of cysts, the walls of which were made up of bony plates, the contents consisting of different colored fluids filled with cholesterin crystals. The patient promptly recovered. Of the five other cases reported all were subjected to operation, but only two survived.

Hoover, F. B.: Gonorrhœal Renal Infections. *Interst. M. J.*, 1915, xxii, 163.
By Surg., Gynec. & Obst.

The author reports two cases of gonococcic infection of the kidneys in which the infection of the urethra and prostate persisted for long periods of five and six years' duration with a gleet discharge in the morning.

The patients had no severe symptoms referable to the kidney, the only symptom being a pain over the kidney region.

The kidneys were catheterized and the specimen upon examination showed gonococci in one case and colon bacilli and gonococci in another.

There was no finding of nephritis, and the infection was limited to the pelvis. He shows the tendency of the colon bacilli to present itself in the course of chronic gonorrhœal cases.

The rapid results obtained in these two cases from injection of 5 per cent argyrol in amounts only sufficient to fill the pelvis are also shown. The urethral infections clear up after the treatment and cure of the kidneys. The cases were cured in about a month.
J. RADD.

Harttung, H.: The Influence of Urinary Obstruction upon the Occurrence of Pyogenic Kidney Infection (Der Einfluss der Harnstauung auf die Entstehung der pyogenen Niereninfektion). *Beitr. z. klin. Chir.*, 1914, xciii, 710.
By Surg., Gynec. & Obst.

In an extensive series of experiments the author endeavored to determine the influence urinary obstruction exerts on the occurrence of pyogenic infection of the kidney. He experimented with the ordinary bacteria, staphylococci and streptococci, coli and typhoid bacilli, and tubercle bacilli, all experiments being conducted upon guinea pigs. He comes to the conclusion that the retention induced by the ligation of the ureters exerts a powerful influence upon the occurrence of pyogenic infection of the kidney irrespective of whether the infectious material is introduced by the ascending or by the hæmatogenous route. The last series of experiments in which the ureter alone was ligated and no infectious material introduced have shown that the aseptic hydronephrosis induced present pathological changes, such as epithelial injury and interstitial proliferation induced entirely by the urinary obstruction and not by the bacterial action, as all the cultures made from these cases remained sterile. By these processes the tissues have lost some of their power of resistance and are unable to resist invasion by bacteria. Even though the infectious agents introduced cannot in some cases be

demonstrated, nevertheless the severe change resulting from the later infection must have been induced by them or their toxins. It is immaterial for the proper estimation of the influence exerted by obstruction whether the bacteria are introduced by the ascending or by the hæmatogenous route. That obstruction produces conditions favorable for the bacterial development, experiments have proven conclusively, if we compare the results obtained in the obstructed with those of the unobstructed kidney.

Two important questions arise: Which of the two possible routes of infection is the more frequent in the production of the kidney infection? This will be decided later. From the series of experiments the author is unable to state. The other question is: Is it possible to determine from the changed kidney whether the case is one of hæmatogenous or ascending infection? From the author's experiments he thinks he may state that it is. He determined that in the hæmatogenous form of infection the cortex was primarily involved and most severely involved, whereas in the ascending type of infection the pelvis of the kidney showed the graver changes. On the other hand, it must be stated that in some cases the changes were not of a decisive nature. In these cases the microscopic examination renders valuable information. The question will be taken up later and discussed more fully from a clinical point of view.

L. A. JUHNKE.

Fowler, O. S.: A Plausible Etiology of Some Forms of Renal Hæmorrhage, Usually Called Either "Essential Hæmaturia" or "Renal Varix."
Denver M. Times, 1915, xxxiv, 298.

By Surg., Gynec. & Obst.

Fowler discourages the use of such terms as "essential hæmaturia" and synonymous terms on the ground that they are used to cover our ignorance.

Renal varix describes a definite lesion, but the author thinks it unwisely chosen, believing that the condition is not a varicosity but an inflammation with ulceration, the infection being difficult to demonstrate because of the presence of large numbers of blood-cells.

So-called "essential hæmaturia" may be from one or both kidneys. Localized nephritis has been demonstrated in some cases (Albarran).

The author found ureteral obstruction and infection in some of his cases. Floating kidney and pregnancy may give rise to this condition, and in these it is probably caused by obstruction and infection.

The suggestion that essential hæmaturia is due to passive congestion he doubts on the ground that hæmorrhage is never produced in other organs from this cause, also that hæmorrhage is not produced by the passive congestion following ligation of a large aberrant renal vein.

The condition described as renal varices, the author believes to be only that due to inflammation and ulceration.

As to treatment, rest in bed, urinary antiseptics, increased fluids, and proper diet as indicated in other forms of pyelitis are of temporary value.

The results of renal lavage and the instillation of epinephrin do not justify general adoption.

Nephrectomy is justifiable only where hæmorrhage is uncontrollable by any other means and when proven to be coming from only one kidney.

Nephrotomy and pyelotomy give temporary relief by the effect of drainage on the infection.

Serum may also be of temporary value. Vaccines have seemed to be of more value after the kidney is replaced in proper position.

The author believes that infection is the causative factor in these cases, and advocates drainage, which he thinks is best accomplished by nephropexy, the kidney being anchored in an oblique position, by means of strips of fascia lata, to give free drainage. He has used this method on forty kidneys with satisfactory results. His conclusions are:

1. "Essential hæmaturia" and synonymous meaningless terms should be eliminated from our medical vocabulary.

2. We believe infection of the pelvis or parenchyma is at the bottom of all these obscure renal hæmorrhages.

3. The term "renal varix" has been given to a condition that is accurately descriptive of localized inflammation with ulceration, and the old term ulceration should be used instead of using the new term "renal varix."

4. Hæmorrhage may come from an ulcerated area, microscopic or macroscopic in size.

5. Nephrectomy should never be done except where life is endangered by the hæmorrhage.

6. Medical treatment may give temporary relief in a small per cent of cases.

7. We must modify our laboratory technique, on account of the large number of blood-cells, by not centrifuging the urine. This will facilitate the detection of casts, pus, and micro-organisms that would otherwise be overlooked.

H. G. HAMER.

Jaschke, R. T.: Diagnosis and Treatment of Kidney Tuberculosis in Women (Zur Diagnose und Therapie der Nierentuberkulose bei Frauen).
Ztschr. f. gynäk. Urol., 1914, v, No. 1.

By Surg., Gynec. & Obst.

In general the author confirms the experience of other men and emphasizes in particular the necessity of early diagnosis and early operation. Of the six cases described, two deserve closer study: one because it commenced ten years previously with a primary hæmorrhage and because in spite of its long duration, the process remained unilateral and did not even involve the bladder; the other because it was followed three weeks after operation by a disseminating microscopically positive tuberculosis of the vulva, which responded to X-ray therapy.

L. A. JUHNKE.

Gordon, G. S.: The Silence of Renal Tuberculosis.
Surg., Gynec. & Obst., 1915, xx, 216.

By Surg., Gynec. & Obst.

There is a large percentage of cases of renal tuberculosis in which pain over the affected organ is lacking throughout the whole course of the disease. Tension, which is a frequent cause of pain, is not so apt to occur in renal inflammations because of free natural drainage through tubules, calyces, pelvis, and ureter, and because these conduits are constantly flushed with urine. When these passages are suddenly blocked pain does occur (renal colic), but gradual obstruction may cause only an ache or even no discomfort at all. Even tenderness on pressure may be absent.

Four cases of silent renal tuberculosis are reported. Three of these ended fatally, and of these only two were diagnosed during life and very late in their course. The fourth case was apparently one of simple cystitis, for which nephrectomy and ureterectomy were done with good result.

The object of the paper is to lay stress on the fact that the presence of renal tuberculosis is often overlooked when pain or tenderness over the kidney is absent, and to urge more careful examination of all cases of hæmaturia or cystitis. Also a patient suffering from loss of weight and strength without manifest cause should always have the urine examined for pus, which may be of renal origin and come from a tuberculous process there. The methods of diagnosis in obscure cases are discussed.

Hess, O.: Experiences with the Phenolsulphonephthalein Method of Testing the Function of the Kidney. *Bull. Johns Hopkins Hosp.*, 1915, xxvi, 52.

By Surg., Gynec. & Obst.

The experience of Hess with the phenolsulphonephthalein test of kidney function agrees in the main with the published reports of other observers. He finds that there exists for the healthy kidney a typical curve of excretion for the first four 15-minute periods. Under normal conditions, the quantity excreted during the first 15-minute period is increased during the second, rarely increases during the third, decreases during the fourth, and then steadily drops to zero. However, even normal kidneys may show certain variations in excretion.

He has found in every case of kidney disease confirmed by autopsy or operation an abnormal phenolsulphonephthalein excretion closely paralleled by the severity of the condition. This is most striking in chronic nephritis. Every case of abnormally low or entirely absent excretion allows of a very bad prognosis.

In acute disease of the kidney, in toxic derangement thereof, and in amyloid kidney, the results of the test are not so clear, being occasionally contradictory. In cardiac insufficiency the excretion is delayed — to become normal again as the cardiac condition improves.

The excretion is abnormal where NaCl or urea excretion is below normal. There is also a parallel

between the excretion of phenolsulphonephthalein and the diastase contents of the urine.

In unilateral kidney disease, the test is of value in determining the work each kidney can do.

He believes that we are justified in concluding that the phthalein test surpasses all other similar methods in its simplicity.

A. NELKEN.

Patton, J. A.: Surgical Kidney and Life Expectation. *Urol. & Cutan. Rev.*, 1915, xix, 81.

By Surg., Gynec. & Obst.

In a circular letter to 64 medical directors of life insurance companies, 52 of whom responded, the author put the following questions:

"What has been the practice of your department with reference to applicants giving a history of nephropexy, nephrotomy, and nephrectomy?"

"If considered favorably, what investigation do you make and what length of time do you require following the operation? What effect upon your action has the following causes of the nephrotomy or nephrectomy: (1) abscess; (2) calculus; (3) injury; (4) tuberculosis; (5) tumor?"

The replies for cases of nephropexy can be easily summarized: Four failed to answer; 5 had had no experience; 8 would decline; 4 would treat each case individually; one stated that they must trust to luck. Simple cases, where the statements showed recovery, were accepted by one, in six months; 6 after one year; 5 after two years; 3 after three years; 4 after five years; 8 after sufficient (?) time to insure recovery; 2 would refuse them for term insurance; 1 would get off the risk by age 50 to 55; 2 did not think mortality was increased; 1 treated the nephrectomy as a case of appendectomy; 2 would issue at standard rates.

Nephrotomy cases would be declined by 16 companies; nephrectomy cases would be refused by 34 companies without any consideration; and all were united on the rejection of tubercular or malignant tumor or diseased cases that had had either a nephrotomy or nephrectomy. The cases would be considered on their merits or individually by 8 companies in nephrotomy and by 4 in nephrectomy.

Nephrotomy cases, because of abscess, are declined outright by 5 companies; 1 considered them extremely hazardous; 1 stated no rule, but did not favor such cases. One took cured cases after one year; 2 after two years, but 1 on substandard forms only; 1 after three years; 1 after three to five years, depending upon the case; 3 after five years; 1 stated that single abscess was not a factor. The action in nephrectomies due to abscess is not stated with sufficient clearness to permit any definite classification. The nephrotomies for calculus would be declined by two companies.

I. S. KOLL.

Herrick, F. C.: Chronic Pyelitis; Its Cause, Clinical Course, and Treatment. *Ohio St. M. J.*, 1915, xi, 173.

By Surg., Gynec. & Obst.

After enumerating the various causes of pyelitis, the author calls attention to some facts proven by

recent experimental work (Draper, Barber, Braasch, and Koll). First, a simple cutting of the ureteral sphincter is not necessarily followed by renal infection. (Braasch). Again, a paralysis of ureteral prostatic by stripping the ureter from the surrounding tissues is followed in 75 per cent of cases by hydronephrosis. This evidently must be explained by assuming the ureter to be a propulsive organ and not a simple conducting tube. There is nothing in this work to show that a spasmodic stricture did not exist at the beginning or end of the ureter or that congestion attendant upon manipulation and surrounding scar formation did not produce an actual ureteral obstruction. And, finally, a cutting of the sphincter plus a ureteral paralysis, as above, was followed by renal infection without hydronephrosis.

He emphasizes the fact that injury to the kidney seems as necessary for the development of the organisms and a pyelitis as does injury to the lower urinary tract for their entrance into the renal pelvis.

In the treatment of the chronic condition he recommends the following procedure:

1. Determine the source of the infection. A pus-tube, troublesome prostate, fibroid uterus, diverticulitis, or an inflamed appendix lying on the ureter must be removed, a cholecystitis drained; a cystocele or involvement of the lower ureter in a pelvic scar must be corrected.

2. Correct any mechanical obstruction along the urinary tract from urethral stricture to renal ptosis. Special attention must be paid to hydronephrosis of however small capacity.

3. There remains a large group of cases due to an ascending infection from a more or less badly infected bladder which requires local treatment. Therapeutic injections into the renal pelvis have been used for about ten years but only more recently has their real value been recognized. The passage of a ureteral catheter and the irrigation of the pelvis with some solution of a silver salt, silver nitrate 1:500 to 1:3000; protargol 5 per cent, argyrol 25 per cent (Pilcher), have given splendid results. Koll advises liquid aluminum acetatis, 2 per cent, since the acid radical of this drug is especially deleterious to the colon bacillus. Good results have been obtained by continuous bladder irrigation for eight to ten hours at a time with a warm one per cent boric acid solution in sterile filtered water.

4. If such treatment is not effective and the acute attacks are recurrent and the disease unilateral, nephrectomy is justified.

W. E. LOWER.

Barbat, J. H.: Ureteral Defect Repaired with Loop of Intestines. *Calif. St. J. Med.*, 1915, xiii, 70.

By Surg., Gynec. & Obst.

This case is interesting because it shows that with proper technique the intestine may be used to bridge any defect of the ureter between the kidney and the bladder.

The patient, a woman aged 30 years, had been

operated upon early in 1911 for chronic pelvic inflammation. The operation was extremely difficult and the anatomy much distorted, and the surgeon had the misfortune to include the right ureter in one of the ligatures. Thirteen days later an incision near McBurney's point gave exit to a large amount of bloody urine. The urine continued to be discharged through the wound, and two weeks later an operation was attempted to repair the severed ureter. It was found that about one and one-half inches of the right ureter was necrosed, and the ends could not be brought together; so a ureteral catheter was passed up through the bladder and into the proximal end of the ureter, and the tissues sewed over it in an attempt to restore the continuity of the ureter. This procedure was not successful, and the urine continued to flow through the abdominal wound.

The author saw the patient first on May 27, 1911, at which time her general condition was fair. She presented a central abdominal scar in very good condition, and a small fistulous opening near McBurney's point leading directly back three inches, from which clear urine flowed; with indigo-carmin, colored urine appeared almost simultaneously from the left ureter and the fistula, showing the competence of the right kidney. The urine was free from bacteria, and the chemical composition identical with that of the left kidney. The question arose as to whether the kidney should be removed or conserved. In view of its perfect condition the author determined to attempt its conservation.

The patient was prepared by being given 10 grains of hexamethylene tetramine three times a day for six days before the operation, and having the bowels thoroughly cleaned out, five grains of guaiacol carbonate being administered every four hours for two days before the operation. The bladder and fistula were washed out with 10 per cent barolyptol solution, and the bladder left full. A long right rectus incision was made, and the intestines were found matted together by numerous adhesions, which were rapidly cut apart with a scalpel, and the raw places sewed over with fine catgut. The ureter was found and traced down to a mass corresponding to the bottom of the fistula. It was ligated close to the mass and cut; the proximal end was lifted up and clamped. A loop of ileum seven inches long was isolated from the fecal tract, the continuity of which was restored by joining the cut ends with a Murphy button. Great care was exercised to preserve the blood supply of the isolated loop and avoid tension on its mesentery throughout the operation. The loop was flushed out with a large amount of 1:1000 formalin solution, and the upper end closed by inversion. The lower end was sewed to a slit in the bladder by means of continuous through-and-through catgut sutures. With a von Graeffe knife, directed downward, a small oblique puncture was then made in the side of the intestinal wall, one inch from the closed end. The end of the ureter was split in half for a distance of one-third of an

inch, and by means of two sutures of very fine catgut the split ends were drawn into the lumen of the intestine and firmly anchored. The muscularis and peritoneum of the intestine were drawn over the ureter at the upper part of its emergence from the intestinal puncture. The abdominal wall was closed in tiers.

Cystoscopic examination three weeks after the operation showed that the right ureter communicated with the old fistula and permitted some urine to flow backward. This fistula closed three months after the operation. The patient went home after six weeks with both fistulae discharging very small quantities of urine, which caused her very little inconvenience.

Cystoscopic examination on November 12, 1913, showed urine from the left ureter to be sterile, while urine from the bladder showed colon bacilli and shreds of mucus. The bladder was not tender and its walls did not show any signs of an inflammatory process. The patient has gained 25 pounds since the operation, and is enjoying the best of health. The quantity of urine secreted has been normal throughout the entire time, and with the exception of the mucous shreds and the colon bacilli is perfectly normal. The author therefore concludes that the right kidney is functioning normally and has not yet become infected. It is now over three years since the operation and there is good reason to believe that the patient will continue in good health.

H. A. MOORE.

BLADDER, URETHRA, AND PENIS

Cabot, H.: Some Observations upon Diverticulum of the Bladder. *Boston M. & S. J.*, 1915, clxxii, 300.
By Surg., Gynec. & Obst.

The routine use of the cystoscope has led to the discovery of many cases of diverticulum of the bladder that otherwise would have remained unrecognized due to the fact that diverticula of this viscus, in the early stages, produce no recognizable symptoms.

Cabot believes that the term "diverticulum" should be confined to those pouches, always congenital in origin, occurring most frequently in certain positions, but occasionally seen in almost any portion of the bladder and not due to defective development or lack of closure of any recognized structure. The author cannot agree with Chute that they originate in the little pouches normally seen just above the ureteric orifice, and that they become important only when this pouch is exaggerated as the result of obstructive pressure. Cabot says that diverticula are so frequently found in individuals in whom obstruction is totally absent, in whom, in fact, the symptoms of obstruction are due, not to any obstruction, but to the diverticulum. He is inclined to the view that when found in individuals with urinary obstruction, they are an accidental finding and of no etiological significance. That they are due to some embryonic defect is clear, but Cabot has

as yet seen no adequate explanation of their formation beyond the fact that they are associated with peculiarities of the closure of the cloaca, perhaps with a tendency to budding from this structure. It is to be hoped that some embryologist will furnish an explanation.

Bladder diverticula are covered by the normal coats of the bladder, though the contractility of their muscular fibers is at times certainly defective. The position of election seems to be in the immediate neighborhood of the ureteral openings, on the bladder base, on the sides, and even near the vertex. The effects of bladder diverticula upon the urinary apparatus are largely from (1) those arising from pressure upon the ureter, and (2) from those arising from the inability of the diverticulum to empty itself completely, and therefore its great liability to infection.

The importance of diverticula in the production of hydronephrosis has not, so Cabot thinks, been sufficiently emphasized. The frequency with which they occur in relation to the ureter, and the tendency of the ureter orifices to lie in the diverticulum or to be drawn into it, at once puts the integrity of the kidney upon that side in jeopardy.

The author reports three cases of bladder diverticulum, one being diagnosed only at autopsy; the other two cases were operated upon by Cabot.

In the first operated case, a diverticulum of considerable size lay just above the left ureter, which followed its lower margin and opened just at its orifice. The distention of the diverticulum produced a valvelike obstruction of the ureter, which was much dilated and thickened. The diverticulum was excised, followed by recovery. The second case showed, at cystoscopy, a diverticulum on the right lateral wall of the bladder. Suprapubic extraperitoneal cystotomy was done, the diverticulum excised extra-peritoneally, and the bladder closed with interrupted sutures, a tube drain being left in the bladder. Recovery followed.

H. W. E. WALTHER.

Ballenger, E. G., and Elder, O. F.: Soft Tumor of the Urinary Bladder. *J. Am. M. Ass.*, 1915, lxiv, 580.
By Surg., Gynec. & Obst.

After having diagnosed by cystoscopic examination a bladder papillomata, Ballenger and Elder, in order to judge the thickness of the bladder wall at the tumor base, radiographed the tumor during air-distention of the bladder. The shadow indicated a possible malignancy, and excision instead of fulguration was done. The pathologist's report was negative to carcinoma. Fulguration should be used in case of a recurrence.

C. E. BARNETT.

Hyman, A.: Experiences with the High-Frequency Current in Vesical Tumors. *Urol. & Cutan. Rev.*, 1915, xix, 61.
By Surg., Gynec. & Obst.

The author reports his personal experiences in 15 cases. In his opinion, a correct differential diagnosis can be made between benign and malignant

growths of the bladder. He finds that recurrences are less frequent following high-frequency treatment than after operation, but that it is important to have all patients report for reexamination at intervals of three to six months. The following class of cases are not adapted to this form of treatment:

1. Cases complicated by severe cystitis with a small bladder capacity.
2. Tumors at the neck of the bladder which bleed profusely at each instrumentation.
3. Tumors that show no tendency toward disintegration after several treatments, and operable carcinoma of the bladder.

H. L. SANFORD.

Buerger, L.: Certain Problems in Urethrovessical Diagnosis and Treatment; Description of a New Instrument. *Am. J. Surg.*, 1915, xxix, 54.
By Surg., Gynec. & Obst.

The author calls attention to some of the difficulties that have confronted the cystoscopist, both in methods of observation, cystoscopy, and intra-vesical operative work. A decided impetus has been given to cystoscopic diagnosis by the development of certain types of cystoscopic instruments. The difficulties in observation cystoscopy and ureteral catheterization have been overcome by the construction of an instrument in which the mechanical assemblage of parts makes ureteral catheterization an extremely easy procedure. The development of a new lens system also gave so much more light in the interior of the bladder that the problem of adequate illumination, too, has been completely solved. With the invention of a cysto-urethroscope the posterior urethra was revealed to us in an entirely new light. Perhaps the only region of the urethrovessical tract that was still difficult of access for intravesical operative treatment was the region of the sphincter. By making certain changes in the cysto-urethroscope, Buerger was able to construct an instrument by means of which papillomata at the neck of the bladder could be easily fulgurated and lesions in the posterior urethra and doubtful tumors could be attacked with a punch forceps in a manner similar to that employed in the operating cystoscope. In a number of cases he was able to completely cure papillomata at the neck of the bladder which were wholly inaccessible to the operating cystoscope.

Russell, R. H.: Treatment of Urethral Stricture by Excision. *Brit. J. Surg.*, 1915, ii, 375.
By Surg., Gynec. & Obst.

The author describes the technique which he employs in cases of urethral stricture requiring operative treatment. He would use this operation where any cutting operation is indicated.

He believes that external urethrotomy, which gives immediate relief in conditions of great urgency, has proved in a large number of cases to be elusive and disastrous in the long run, eventuating in the most intractable kind of cicatricial stricture.

In his conclusions he makes the statement that in all cases of stricture that are not easily managed by dilatation, excision of the stricture is advised. In his opinion the operation which he has described should entirely supersede both external and internal urethrotomy.

The article is very well illustrated, the illustrations showing the various steps in the technique. The formal operation is carried out in the extreme lithotomy position, with the pelvis well raised, and is done in the following three stages:

1. The first stage consists in exposure and opening of the membranous urethra and slitting it up forward toward the stricture; incision as for perineal prostatectomy—an inverted V having the apex at the central point of the perineum. The ischio-rectal fossa is opened up on either side, and a bifid retractor used to draw the external sphincter backward, while that muscle is detached at the central tendon connecting it with the bulbocavernosus muscle; the bulb and the transverse perinei muscles are drawn forward, and the membranous urethra and apex of the prostate exposed exactly as in the operation of perineal prostatectomy. The membranous urethra is next opened longitudinally, a silk-thread retractor introduced into either side of the opening, and the urethra then slit up forward until the back of the stricture is encountered.

2. This stage consists in the exposure and opening of the urethra in front of the stricture and slitting it up backward toward the stricture; median incision, meeting the apex of the former incision. A director or Wheelhouse staff is passed, and the urethra opened upon it in front of the stricture. Silk-thread retractors are introduced into the margins of this opening also, and the urethra is slit up backward to the stricture, so that the length of the urethra, including the strictured portion and an inch or two behind and in front of it, will be plainly exposed.

3. The third and last stage consists in excision of the stricture and suturing the urethra. The strictured portion of the urethra together with the fibrous extra-urethral masses is then excised completely; the cut ends are then loosened and freed by undercutting and brought together accurately by five interrupted sutures of catgut.

Leaving the urethra without any further sutures, a rubber catheter is fastened in the bladder, and the two lateral incisions in the perineum are sutured with deep silkworm-gut sutures, two on either side. No sutures are placed in the perineal wound in front of the catheter. The catheter must be left for at least a week; it may then be removed and the perineal wound allowed to heal.

The foregoing sets forth briefly the steps of the operation; there are, however, one or two matters which should be alluded to in greater detail.

When the stricture is fully exposed in the operation, the following points must be specially noticed: (1) The peri-urethral masses of fibrous tissue which caused the obstruction; (2) the dilatation of the

urethra behind the obstruction; (3) owing to the pressure of the urine forward against the stricture it will frequently be observed that the urethra, in addition to being dilated behind the stricture, will have become somewhat pushed to one side, so that a condition approaching to an S-curve appears in the channel at the point of obstruction, and the directions of the urethral channels behind and in front of the stricture no longer correspond, but are out of alignment; in fact, the posterior urethra tends to be pushed forward and to one side of the stricture, greatly aggravating the difficulty of micturition, and rendering the introduction of an instrument almost impossible.

Again, the surgeon must decide as to his exact procedure after the stricture is exposed to view; the urethra will appear as a "strip," interrupted and damaged at the seat of stricture, and the exact amount necessary to remove must be determined at once. If the mucous membrane seems but little damaged, only the peri-urethral masses need be cut away. As a rule, however, it is necessary to excise a portion of ragged and injured mucous membrane. It will be found that the completeness of the exposure renders it easy to conserve the mucous membrane to the utmost; nevertheless, he has on more than one occasion removed upwards of an inch of the urethra.

The position of the catheter insures that the urethral wound which has been sutured shall be protected from contact with urine during healing; when the catheter is taken out it will be found that the wound will close very rapidly, and healing will be complete in a few days. In brief, the restoration of the urethral tube is left entirely to natural processes, as stated at the outset. When healing has taken place it is always found that the patient passes water naturally in a full stream.

Several weeks are allowed to elapse after the operation before an instrument is passed to ascertain the exact condition of the urethra at the point of suture. As a rule this spot can be felt, and but little more, with a good-sized bougie; in any case it is at once dilated gently up to the full size.

The further management of the case is very easy, and resolves itself into the occasional passage of a full-sized instrument as a precautionary measure, the intervals being quite long — altogether a very different kind of procedure from that required in an ordinary case of stricture treated by dilatation.

HERMAN L. KRETSCHMER.

GENITAL ORGANS

Wolfer, J. A.: The Treatment of Undescended Testis; Some Suggestions and Modifications in the Surgical Technique. *Surg., Gynec. & Obst.*, 1915, xx, 228.

By Surg., Gynec. & Obst.

It is the impression of the author that surgeons sacrifice essential structures in their endeavor to replace a testicle. The operation he advocates is very similar to the Davison operation. The inguinal

canal is opened as in the Bassini operation for the cure of inguinal hernia. The testis is found and the cord liberated. The scrotal wall is well stretched and a gauze pack is inserted which is left in position for the time being. The deep epigastric vessels are dissected out and the testicle slipped behind them, thus advancing the internal ring toward the median line. The spermatic vessels are separated from the peritoneum and pushed behind the bulge of the peritoneal sac, and when in this manner sufficient length has been given the cord, the pack is removed from the scrotum and the testicle placed therein. The scrotal outlet is closed by a suture placed from Poupart's ligament to the structures over the pubic spine. The testicle is not fastened in the scrotum but remains there because of a sufficient length of cord and a roomy scrotal fossa.

This operation has been successfully performed in three instances. Drawings and photographs are used to illustrate the technique.

Gallant, A. E.: Sterilization of the Unfit by Vasectomy. *Med. Times*, 1915, xliii, 38.

By Surg., Gynec. & Obst.

The author quotes the following "rational guide to the eugenic movement" from Professor M. Gruber: "People afflicted with serious maladies and malformations; degenerates, such as idiots, imbeciles, lunatics, epileptics, drunkards, habitual criminals; and chronic sufferers, such as tubercular persons and syphilitics in the secondary stages, should be absolutely excluded from procreation. Only such persons should beget children as are perfectly strong, healthy, and well nourished."

We have, today, so far endorsed this law as to provide suitable hospitals, asylums, and educational institutions for the care of the physically and mentally below par, but it will be many decades, apparently, before we accept the Spartan idea that children do not belong to the individual parents but to the state.

If the state has a right and deems it wise for the welfare of the community as a whole to extend existing laws defining who shall and who shall not marry among our free, self-supporting citizens, proscribing those infected, primarily or hereditarily, with communicable diseases, there can be but little doubt as to its right of going a step further by enforcing laws whereby incorrigible and diseased criminals, mental defectives, etc., may be rendered powerless to multiply their kind, and limit the burden of their care to the smallest possible number.

Students of sociology have called attention to the fact that the birth-rate of the criminal and defective classes is increasing much faster than that of intelligent and law-abiding citizens, probably because these defectives have no sense of responsibility and seek only the gratification of their animal natures. Some states have forbidden the marriage of persons who are epileptic, feeble-minded, or afflicted with insanity; but unfortunately the race can be propagated without marriage.

Castration unsexes the individual, and while possibly advisable, according to Chandler, as an additional punishment for a limited number of criminals, it is objectionable as a general measure. The above-mentioned author, however, recommends vasectomy as a simple, safe, and thoroughly efficient measure.

The operation described in this article is that of Sharp of Indianapolis, and is briefly as follows: The scrotum is cleansed with soap, water, and alcohol; the spermatic cord grasped between the thumb and index-finger of the left hand, the vas is detected, and cut down upon, drawn through the wound with a tenaculum hook, stripped of vessels and membranes, ligated above and severed, cutting away any portion of the vas that may have become damaged. This is done in order that the end next the testicle may not become closed. It is very important that it remain open, in order that the secretion of the testicle may be emptied around the vessels of the pampiniform plexus, and there absorbed, for it is through this source that the economy receives the tonic effect of the secretion. Also, where the end is closed there is likely to be cystic degeneration.

Sharp has performed 456 of these operations and has noted no unfavorable symptoms. There is no atrophy of the testicles, no cystic degeneration, no disturbed mental or nervous condition, and the operation is invariably endorsed by those who have been subjected to it.

Belfield maintains that vasectomy sterilizes without the slightest impairment of sexual power or pleasure.

The operation on the female is more difficult, but, if skillfully done, no more hazardous. The oviduct is reached through a median incision, the tube ligated near the uterus and severed beyond the ligature.

H. W. PLAGGEMEYER.

Corner, E. M.: A Case of Calculus in the Vesiculæ Seminales in a Man with Enlarged Prostate.
Med. Press & Circ., 1915, xcix, 134.

By Surg., Gynec. & Obst.

Corner reports the case of a man, aged 70, who had for years suffered with symptoms of prostatic obstruction of such a nature as to demand prostatectomy. Hæmatospermia had also been present for ten years. Suprapubic cystotomy was done, the bladder then being explored by the finger. The prostate was found enlarged with multiple adenomata. No stone was found in the bladder and the urethra was also free of calculus or other obstruction. In the enucleation of the prostate the finger of the operator tore across the ejaculatory ducts and from them expressed a calculus. The vesiculæ were then examined and the right one found full of gritty material.

The examination of the stone showed it to be composed largely of phosphate of lime deposited on a nucleus of mucus. Its color was white. It was situated in the ejaculatory duct just below the

junction of the vas deferens with the duct of the right seminal vesicle. This case suggests that a stone in the vesiculæ may not infrequently have been the explanation of those instances where, prior to enucleating the prostate, no stone has been found in the bladder, but when the posterior part of the prostate has been enucleated a stone is suddenly felt. According to Corner, such stones are only likely to come from the prostatic urethra, the prostate, or the vesiculæ seminales. He distinguishes them in the following way:

Prostatic calculi are small, frequently faceted, polished, multiple, brown and black in color.

Calculi from the vesiculæ seminales are larger, single, soft, and white at first, then fawn-colored, and later a brown black. They consist of lime salts deposited on a relatively large loose nucleus, as seen in a skiagraph.

Vesical or urethral calculi are commonly larger still, and instead of consisting of lime salts, contain some urinary salts; e.g., ammonium urate.

Upon the general character of these calculi there is no need to dilate.

An interesting point clinically is the occurrence of blood in the semen in this case, associated with the presence of grit in the vesicula seminalis and a calculus in the duct. In the great majority of cases of hæmatospermia no cause for the condition is to be found. Tuberculosis of the vesiculæ is commonly taught to be a frequent cause of hæmatospermia, but in Corner's experience, in secondary to tuberculous testicle, this is not so, and where the symptom does exist it is unusual to find any cause for its existence. There might be a nævoid condition. Therefore the presence of hæmatospermia unassociated with hæmaturia in a man suffering from an enlarged prostate, suggests the presence of a calculus in the vesicula and the need of operation.

H. W. E. WALTHER.

Lowsley, O. S.: The Gross Anatomy of the Human Prostate Gland and Contiguous Structures.
Surg., Gynec. & Obst., 1915, xx, 183.

By Surg., Gynec. & Obst.

The median groove of the prostate is found only in the posterior two-thirds of that structure. The width of the gland is always greater and the height always less than the length. There is a gradual increase in the size of the prostate from birth to the fifth year. The size increases rapidly at puberty, and during the third decade the gland reaches its maximum size. There is a slight decrease in size in old age.

Abnormality of the structures causing obstruction at the vesical orifice occurred in 61 of the author's cases; 14.7 per cent of specimens show this abnormality. General enlargement of the prostate occurs in 11.1 per cent of all cases. Albarran's group enlargement may be unilobular or trilobular. There are two types of obstruction at the floor of the vesical orifice. The most common is enlargement of the subcervical group with projections from within

the sphincter. The second type is enlargement of the middle lobe which develops the outside sphincter and projects into the bladder by lifting the apex of the trigonum vesicæ.

The length of the ureter contained within the bladder musculature varies from .75 cm. in the first decade to 1.7 cm. in adult life.

The trigonum vesicæ reaches adult proportions during the third decade; 26.3 per cent of the specimens show asymmetry of the trigonum vesicæ. The length of the trigonum in adults varies from 1.5 cm. to 5 cm. Hypertrophy of the trigone sometimes occurs after the fortieth year.

The distance between the vesical orifice and the upper margin of the verumontanum varies from .55 cm. in the first decade to 1.85 cm. in old age.

The verumontanum reaches adult size during the third decade. It is attached to the trigone above by small bundles of fibers.

The seminal vesicles and vasa deferentia are bound together by a structure composed of the anterior middle and posterior lamellæ. This fascia prevents the dissemination of carcinoma of the seminal vesicles; it causes middle lobe hypertrophy of the prostate to project into the bladder and supports the base of that viscus. Seminal vesicles attain adult size during the third decade. Enlargement occurs in 32.4 per cent of cases over twenty years of age. The right side is enlarged three times as often as the left. Atrophy of the seminal vesicles rarely occurs.

There was not a single case in this series in which an ejaculatory duct opened into the utricle. The utricle is usually contained within the summit of the verumontanum, but it occasionally extends to the base of the gland. There is a great variation in the size and shape of the mouth of the utricle. There were no cases of hypertrophy of either the ventral lobe of the prostate or the apex group of tubules in the series.

Lewis, B.: Prostatic Obstruction and Vesical Atony. *Ann. Surg., Phila.*, 1915, lxi, 276.

By Surg., Gynec. & Obst.

The author maintains that the cause of every case of urinary obstruction and vesical atony is to be found under one or two heads: either physical obstruction or disturbance of the nervous mechanism controlling urination. The cases characterized as "unaccountable" represent incomplete diagnosis. He believes that the only cases of atony which are really incurable are those due to nerve degeneration, and even in these cases much can be done in the way of treatment to improve the prevailing conditions.

He also believes that the most frequent and important of the obscure, unrecognized causes of obstruction are (1) ill-defined contracture at the vesical neck (demonstrable sometimes only by palpation through the opened bladder or urethra); (2) unrecognized syphilis, acquired or hereditary, affecting the spinal centers.

Such conditions are by no means confined to adult life, and should be looked for and recognized at any age, from infancy up, and should be diagnosed and treated in accordance with the refined diagnosis always demanded by cases of urinary obstruction.

Syphilis is a surprisingly frequent cause of such conditions. Lack of syphilitic history or of general nerve symptoms, in obscure cases, should not preclude investigation by means of a Wassermann blood test; if this proves doubtful, a Wassermann test of the spinal fluid should be made as well.

H. L. SANFORD.

Judd, E. S.: Cancer of the Prostate. *Surg., Gynec. & Obst.*, 1915, xx, 274. By Surg., Gynec. & Obst.

Judd states that it is difficult to estimate the frequency of occurrence of cancer in the prostate from operative records, since the cancerous tumor in this gland is very often small and may not produce local symptoms, but it is generally reported that one case in five of prostatic enlargement causing obstruction in old men is due to cancer. In his series of 878 prostatectomies, there were 93 cancers. The youngest of these patients was 51 years, the oldest 82. In addition to these, 84 cases were diagnosed cancer but were not operated on because too far advanced.

In many cases the symptoms of early cancer of the prostate cannot be differentiated from adenomatous hypertrophy. Pain associated with cancer is usually more constant and more marked in the region of the prostate and is not necessarily associated with micturition. Frequency of urination is also a prominent symptom and usually one of the first to appear. Hæmaturia was noted in 21.9 per cent of the cases and was a comparatively late symptom. The specific gravity was unusually low, in many instances ranging from 1,002 to 1,005. Physical examination in these cases may reveal a small prostatic gland or, if hypertrophy is associated with the cancer, the enlargement may be quite marked. If on palpation the surface of the prostate is rough with hard nodules, cancer may always be suspected, since in benign cases the prostates are nearly always smooth. In some of the cases in the series the gland was soft on palpation, due to the fact that the adenomatous hypertrophy predominated and the cancer could not be felt.

A characteristic cystoscopic picture is a small prostatic bar, unless adenomatous hypertrophy exists at the same time. Cystoscopic examination is of great aid in these cases but should not be made in evidently hopeless cases, since the reaction following may be quite severe. A study of the specimens removed at operation showed that in about 75 per cent of cases cancer was associated with hypertrophy, and in the remaining 25 per cent cancer occurred in the prostates in which evidence of hypertrophy could not be found. The benignly hypertrophied gland in some of these cases is quite as readily enucleated as in the ordinary case, and unless the posterior segment is enlarged the malignant process

may easily be overlooked. If the hypertrophied part is more firmly attached posteriorly or shells out with difficulty, there is always suspicion of cancer.

Radical operations for cancer of the prostate have gained favor slowly, not because it is impossible to remove the growth within a reasonable degree of mortality, but largely because it is impossible to do a thorough radical removal of the cancerous prostate and the adjoining part of the bladder without completely destroying the mechanism of urinary control. Patients who are incurable but fairly comfortable either with or without the catheter should not be operated on, although certain of those who have not used catheters should be advised to do so since they may be made more comfortable by its use. In many cases the obstruction to urination is due to a benign hypertrophy. Removing the obstruction and also a part of the cancer will entirely relieve the patients for a time.

Through correspondence and personal communication the end-results in 82 of the 93 patients operated on have been traced.

8 have lived more than 3 years.
12 have lived more than 2 years.
13 have lived more than 1 year.
24 died within the first 6 months.
5 died, date unknown.

Patients still living after 6 months.....	3
Patients still living after 1 year.....	7
Patients still living after 2 years.....	4
Patients still living after 3 years.....	3
Patients still living after 4 years.....	3
Patients still living after 9 years.....	1

The patient who is living and free from symptoms nine years after the operation had a very small cancerous nodule removed. Many of the patients living at the present time are entirely free from symptoms. Three that were operated on within the year, yet more than six months ago, are well. In the cases of recurrence, hæmaturia was one of the first evidences of the recurrence. Difficulty of urination was also an early symptom and became rapidly marked in a number of cases, necessitating suprapubic cystotomy. Several patients lived more than three years without evidence of trouble when there was a return of all of their symptoms.

MISCELLANEOUS

Walker, J. W. T.: Urinary Antiseptics. *Clin. J.*, 1915, xlv, 33. By Surg., Gynec. & Obst.

In the concluding installment of his paper on urinary antiseptics Walker discusses the method of treatment when the urine is strongly alkaline as the result of bacterial decomposition, the effects of diluents and dilute urine on the action of urotropin, idiosyncrasies in regard to the formaldehyde series, urinary antiseptics as a prophylactic agent, and the limits of urinary antiseptics.

Sodium acid phosphate and ammonium benzoate

are the only drugs which act powerfully in turning alkaline urine acid. The first is given in 20 grain doses three times a day and the reaction of the urine noted. The dose may be increased to 150 grains, the increase being limited by the effect on the bowels. When the dose reaches 360 grains a day a little diarrhœa usually appears. The antiseptic drug which acts most powerfully in an alkaline urine is boric acid. A useful combination in alkaline urine is ammonium benzoate and boric acid in doses of 10 or 15 grains each. The dose of ammonium benzoate may be increased, and when the action of the urine becomes acid, urotropin should be substituted for the boric acid. The effect on an alkaline cystitis of successfully turning the ammoniacal urine into an acid urine is remarkable, not only on the symptoms but also on the urine itself.

The administration of diuretic drugs and waters forms an important part in the routine treatment of urinary infections. Where the drugs render the urine alkaline, their use in combination with urotropin is to be avoided. It is necessary, therefore, to choose between the two methods of treatment: (1) powerful diuresis, and (2) antiseptic action by means of the formaldehyde series.

In advanced renal disease the efficacy of urotropin is reduced for two reasons: (1) there is diminished excretion of the drug, and (2) when well excreted the condition of the urine is unfavorable to the liberation of formaldehyde. The urine is copious and neutral or faintly acid, and it is difficult or impossible to increase its acidity. Walker does not agree with the results obtained by Burnam and by L'Esperance. He gives the analysis of 230 personal cases in which 79, or 34.3 per cent, gave a negative formaldehyde test. A close analysis of these cases substantiates Walker's contention that the alkalinity of the urine is the important factor in the non-appearance of formaldehyde in the urine after the ingestion of urotropin in sufficiently large doses—10 grains or more four times a day. The 3 cases where urotropin was excreted in an acid urine but formaldehyde was not liberated he is unable to explain, but suggests that this was probably due partly to an idiosyncrasy of the patient and partly to the action of the gastric juice in splitting the urotropin so that no formaldehyde was absorbed.

The use of urotropine as a prophylactic in all cases of instrumentation of the urethra and bladder is strongly recommended.

In addition to an idiosyncrasy of some patients to urotropin, other limitations are found in that type in which infection is associated with such lesions as stone, enlarged prostate, chronic prostatitis, stricture, pyonephrosis, etc. The associated condition should receive attention before the urinary antiseptics can be expected to free the urinary tract from infection.

H. A. FOWLER.

SURGERY OF THE EYE AND EAR

EYE

Critchett, A.: Small Optical Iridectomies in a Case of Lamellar Cataract. *Proc. Roy. Soc. Med.*, 1915, viii, *Sect. Ophth.*, 27.

By Surg., Gynec. & Obst.

Critchett reports a case of lamellar cataract in which he did small iridectomies with good results. He advises this operation in cases where there is a small well-defined nucleus with clear margin. The operation is done under a general anæsthetic with a small very sharp needle bent at an angle. The patient is well in 24 hours and the reaction is nil.

W. G. REEDER.

Clark, C. F.: Congenital Cataract; a Study of a Few Interesting Cases. *Ohio St. M. J.*, 1915, xi, 79.

By Surg., Gynec. & Obst.

In estimating the result we may hope for after operation for congenital cataract we must take into consideration that we are generally dealing with a patient in whom there has existed some abnormal element in foetal development, and not infrequently other portions of the eye are affected as well as the crystalline lens, and for this reason perfect vision may not be possible even though the lens be removed and a clear pupil obtained.

In regard to the surgical treatment of this condition the author advocates the rapid or radical method of treatment. This consists of a free division of the capsule and stirring up of the lens substance at the first operation, followed by linear extraction of the broken-up lens material in a few days, usually 7 to 10. This procedure may lead to a temporary glaucomatous process being established. A child's eye, however, being elastic is capable to a certain degree of resisting this tendency to acute glaucoma, and from his experience the author considers it safer to subject the eye to this brief state of increased tension than to the prolonged and repeated risks from infection required by the older technique of repeated discissions.

J. A. WINTER.

Wylie, C. B.: Acquired Non-Traumatic Cataract of the Young. *W. Virg. M. J.*, 1915, ix, 298.

By Surg., Gynec. & Obst.

The author discusses the relationship between acquired non-traumatic cataract of the young and intranasal pressure. He has had 11 cases in 5 years, the condition of the various lenses varying from slight opacity to complete cataract.

A brief account of the relationship of the nerves supplying the nasal cavity and ocular structures is given. The ophthalmic and superior maxillary

nerves respectively supply the ocular and nasal cavities with sensory impulses; the sympathetic system anastomoses abundantly with these sensory nerves through their ganglionic centers; i.e., the ciliary or ophthalmic ganglion and the sphenopalatine or Meckel's ganglion. This close relationship between these sensory nerves and the sympathetic ganglions and the fact of the sympathetic nerves being also vasomotor in function give to them a controlling influence over nutrition. Continued pressure within the nasal cavity causes an atrophic condition of these so-called trophic nerves, which in turn interferes with the nutrition of the crystalline lens and capsule, leading to opacity formation.

The author cites 11 cases with the lenses in various stages of cataract formation and summarizes as follows: 6 cases showed marked improvement following nasal operation and constitutional treatment; 5 cases with disturbance of vision ranging from 3 to 6 years showed no improvement. Lens extraction, however, gave fairly useful vision. The conclusion drawn is that the earlier the operative procedure within the nasal chamber the better the result.

J. A. WINTER.

Smith, P.: The Technique of Iridectomy and Its Performance as a Preliminary to Cataract Extraction. *Ophth. Rec.*, 1915, xxiv, 120.

By Surg., Gynec. & Obst.

The author is in favor of the two-stage operation because he thinks there is less risk and he feels more confident of a good result when he follows this procedure. A 4 mm. broad keratome and a Tyrrel iris hook, instead of an iris forceps, are employed by Smith.

The scissors are held transversely across the wound so that when they close they are over the vertical meridian of the cornea. The room is darkened a little and a lighted candle held by a nurse is used as a fixation object. Artificial light is used to illuminate the field of operation and the author operates with the patient in bed.

G. I. HOGUE.

Posey, W. C.: Some Unusual Forms of Congenital Cataract; Remarks on Their Management. *Penn. M. J.*, 1915, xviii, 357.

By Surg., Gynec. & Obst.

Congenital cataracts present few difficulties in diagnosis and treatment. Mooted points are the age at which operation should be done and the manner of operating. The age at which operation should be attempted depends on the amount of lens opacity and the degree of vision. Posey does

not operate before the child is ten months old, as structures making up the anterior segment of the eye are poorly developed before that age.

Where the degree of vision is fairly good, one should postpone the operation until the patient is three or four years old. The author advises extreme conservatism when operating and prefers cautious and repeated needlings on one eye at a time.

The above refers to the majority of cases of congenital cataract and includes the usual zonular varieties and the forms of total lens opacity. The author treated a recent case of total binocular cataracts by removal of a fragment of lens capsule with capsule forceps and by division of iritic membrane, blocking the pupil by iridotomy. The tough resistant membranes met with in some congenital cataracts are treated by displacement downward of the opaque tissue. Where the pupil is small and does not dilate well with atropine, an iridectomy should be done first. J. A. WINTER.

Lewis, A. C.: A Case of Complete Bilateral Irideremia in a Child Whose Father Has Bilateral Coloboma of the Iris. *Ophth. Rec.*, 1915, xxiv, 134.
By Surg., Gynec. & Obst.

Lewis reports a case of a boy with complete irideremia, the margin of the lens being visible in any light. The media are clear and the fundus negative. Photophobia is marked in solar light; vision is reduced. The boy's father has a bilateral nasal coloboma of the iris. The heredity acquirement of such a condition is more apt to occur where the female parent is affected. E. B. FOWLER.

McGuire, H. H.: Hydrophthalmos Following Trauma. *Ophth. Rec.*, 1915, xxiv, 127.
By Surg., Gynec. & Obst.

The patient, a boy four years of age, was struck in the right eye by the pointed end of a piece of steel wire. Upon examination there was found to be present a perforating wound of the cornea with rupture of the anterior capsule of the lens and a beginning traumatic cataract; there was a slight inflammatory reaction but no increased tension. Two years later a secondary glaucoma developed with a pressure of 54. Tension became normal after a large iridectomy had been performed. One month later the tension rose again and an Elliot trephine operation was done with good results. One year later the globe was enormously enlarged and an enucleation was performed. G. I. HOGUE.

Moore, R. F.: Lipæmia Retinalis. *Lancet*, Lond., 1915, clxxxviii, 366.
By Surg., Gynec. & Obst.

Moore adds to the literature two cases of this rare affection, both occurring in young individuals suffering from diabetes mellitus. The appearance of the eye ground is striking and characteristic, and in addition it forms the only means, apart from a blood analysis, of diagnosing the condition of lipæmia.

The fundi of Case 1 were studied 27 hours and

again 20 hours before death, and the condition of the blood was recognized by this means. The abnormal features were almost entirely limited to the appearance of the retinal vessels. These were of a salmon color on the disc and for a short distance beyond; but when traced toward the periphery the color became much less saturated, and gradually merged into a cream color with almost no pink tinge. The color of the arteries and veins did not differ at all. In the center of the disc a faint central light streak was seen on the arteries, and by this means, but by no other, could the arteries be distinguished from the veins; toward the periphery both sets of vessels were identical in appearance. Both arteries and veins were well filled, perhaps a little abnormally so, but there was no turgidity or obvious distention. The general tint of the fundus was rather pale. The optic disc was normal in appearance, its edges were perfectly sharp and clear-cut, and neither hæmorrhages nor exudates were anywhere to be seen.

The description of Case 2 applies in every essential particular to Case 1, but there were two differences of degree. The color of the vessels was of a more saturated salmon-pink and extended farther outward into the peripheral vessels; and all the vessels, whether arteries or veins, were markedly distended and therefore tortuous; they were about twice their normal diameter.

So far as can be judged from the descriptions of all reported cases, the intensity and extent of this salmon tint was greatest in the author's Case 2. While at the other extreme, in Heine's case the vessels looked as though they contained milk and not blood.

The marked change in color of the retinal vessels was due probably to the condition of the plasma, and does not imply a change in the blood pigment.

Moore's bibliography includes 30 cases to date of writings, but omits the one reported by Darling of Chicago. G. D. THEOBALD.

Lister, W. T.: Removal of Eyes in the Presence of Orbital Cellulitis. *Brit. M. J.*, 1915, i, 418.
By Surg., Gynec. & Obst.

It is well known, says Lister, that to remove an eye in which there is panophthalmitis and an open wound in the globe is a risky procedure and liable to be followed by septic meningitis if the operation is carried out in the ordinary way with division of the optic nerve and consequent opening of its sheath.

If in dealing with such eyes an orbital cellulitis already exists, it is reasonable to believe that a still greater risk of infection of the sheath of the nerve might supervene and be followed by meningitis if the eye is enucleated after the customary manner. To prevent such a serious complication, Lister advises that the contents of the globe be thoroughly eviscerated, taking extreme care that all traces of the retina, and especially the choroid, are scraped away to avoid any chance of sympathetic inflam-

mation; then the tendons are divided; and as a final step the sclerotic is pulled out of the orbit and cut off far back, leaving only a frill around the intact optic nerve.

Certain circumstances might modify such an exact procedure; for instance, (1) if the penetrating wound is small or if it has healed, it would simplify matters if the conjunctiva and tendon were first divided while the globe is tense, then proceed as above; or (2) if the globe is collapsed, before proceeding with the second step of severing the tendon, pack the sclerotic with gauze; or (3) if the globe is mutilated, carry out the second step by picking up the separate portions of the sclera with pressure forceps, making them taut by pulling forward, and then cut off the muscles.

The points to be borne in mind are: (1) Remove all trace of retina and choroid; (2) cut away the bulk of the sclera; but (3) leave a narrow rim of sclera around the intact optic nerve.

G. D. THEOBALD.

Verhoeff, F. H.: Histological Findings After Successful Sclerostomy. *Arch. Ophthalm.*, 1915, xlv, 129. By Surg., Gynec. & Obst.

The author points out that during the past five years only a small percentage of eyes operated upon for relief of glaucoma ever come to microscopic examination, and most of these have been unsuccessful cases. The literature shows but three eyes successfully operated upon by this method, all of which were removed after death. In the following cases the eye was removed during life seven and one-half weeks following the sclerostomy on account of a spindle-cell sarcoma of the ciliary body.

Examination showed the right eye normal, tension 20 mm. (Schiotz). Four days before entering the hospital the patient noticed for the first time a marked reduction in vision of the left eye with pain in the eye. The pain yielded to miotics, but vision remained unchanged, 20/200; the cornea was hazy; the anterior chamber showed a supposed small hyphæma; the pupil was dilated and somewhat eccentric; the fundus could not be seen; tension 60 mm. (Schiotz).

On May 24, 1914, sclerostomy, with large button-hole iridectomy, was done in accordance with the Verhoeff method; an atropine solution was used at the completion of the operation. Seven days after the operation a bilateral detachment of the choroid occurred with a marked reduction in tension, all of which disappeared in a few days. July 15, 1914, the left eye was enucleated for supposed sarcoma of ciliary body.

The author emphasizes the importance of removing the episcleral tissue about the site of operation, as it tends to interfere with the closure of the scleral opening. The fistula is partly filled with an extremely delicate connective tissue almost free from cells. Caught within its meshes are a few tumor-cells evidently deposited from the aqueous. The tissue has evidently originated, not from the sclera,

but from the tissue of the bleb. Within it are numerous, irregular, ill-defined empty spaces, which communicate with other spaces which open directly into the anterior chamber. The latter are thus analogous to iris crypts. The free surface of the tissue is not covered with endothelium, nor are the spaces or crypts.

The edges of the scleral fistula show evidence of recent proliferation, with formation of new fibrous tissue and increase in the number of fixed cells. This, no doubt, has resulted from the trauma of the operation. The lumen is therefore somewhat smaller than it originally was (1 mm.). There has also been some proliferation from the outer surface of the sclera everywhere beneath the bleb. The new tissue resulting has a much denser character than that of the bleb itself, and in places has extended as a thin layer over the outer end of the fistula, thus becoming a sort of cribriform plate with wide irregular openings. Descemet's membrane ends abruptly 0.5 mm. from the edge of the fistula, apparently having retracted from the opening. The corneal endothelium continues almost to the edge of the fistula, but nowhere extends into the latter. The outer edge of the fistula is about 0.5 mm. from the canal of Schlemm. The root of the iris remaining after the iridectomy is firmly adherent to the corneosclera and is much thinned. It does not quite reach the edge of the fistula. In the line of adhesion are a number of sarcoma cells.

The bleb over the fistula consists of a highly oedematous delicate connective-tissue meshwork containing stellate fixed cells, and closely resembles the unpigmented stroma of a normal iris. It contains few blood-vessels and shows no infiltration with chronic inflammatory cells. Within it occur irregular communicating spaces which at first sight appear entirely empty, but which on closer examination are found to be partly filled with a barely visible connective tissue, free from fixed cells, continuous with the surrounding stroma. The tissue is even more delicate than that within the fistula. None of the spaces is lined with endothelium. Some of the large spaces extend up immediately beneath the epithelium.

The epithelium over the bleb is thinner than that of a normal conjunctiva, due to a reduction in the thickness and number of the squamous cells of the surface. Another noticeable change is that the basal cells are evidently swollen, being increased in size and having a more transparent and less deeply staining cytoplasm than is normal. These changes are especially marked in the epithelium over the large spaces just described.

C. A. MAGHY.

Eason, H. L.: Case of Bilateral Temporary Hemianopia; Rapid and Permanent Recovery of Vision After the Administration of Thyroid Extract. *Proc. Roy. Soc. Med.*, 1915, viii, Sect. *Ophthalm.*, 32. By Surg., Gynec. & Obst.

Eason reports a case that came under observation nine years ago; although practically blind the

patient improved rapidly under thyroid extract treatment. At present the right eye has normal form, field, and vision. The hemianopia persists in the left eye and the vision is 6/60. An abnormally deep sella turcica is shown. W. G. REEDER.

Napier, F. H.: The Treatment of Glaucoma. *Med. J. South Africa*, 1915, x, 118.

By Surg., Gynec. & Obst.

Napier gives a concise résumé of the important operative procedures devised for the relief of glaucoma since the introduction of iridectomy by von Graefe. He has arrived at the definite conclusion that the Fergus-Elliot operation has but one objection; namely, it takes longer to perform than any other, but that this objection is counterbalanced by its safety. He regards the trephine operation as (1) comparatively easy to perform; (2) it is practically painless except at the moment of escape of aqueous (in ordinary iridectomy or in Lagrange's operation the escape of aqueous occurs at an early and critical point in the operation and is often the cause of accidents); (3) it is not complicated by those immediate risks which are attendant upon the insertion of a knife into the anterior chamber, which is too often a potential space; (4) it can be performed for every variety of the disease and at any stage with safety.

It would appear that the so-called "quiet iritis," which somewhat frequently occurs on the third or fourth day, should be regarded as an objection to the operation, but the author claims that such a complication is not a new thing, inasmuch as it has been recognized for many years in every operation in which the iris is injured or excised, and that it can be successfully combated with atropin.

He concludes by saying that we are indebted to Lagrange for the conception of an iris-free fistula in the sclerotic; to Elliot for the elaboration of an operation founded upon the same principle but simpler and safer.

G. D. THEOBALD.

Spicer, W. T.: Angioid Streaks in Brother and Sister; a Suggestion that the Streaks are Non-Vascular. *Proc. Roy. Soc. Med.*, 1915, viii, Sect. *Ophthalm.*, 33.

By Surg., Gynec. & Obst.

Spicer reports two cases of so-called angioid streaks in the retina in brother and sister. In each the loss of vision had first appeared at the age of 35. There was extensive macular degeneration with peculiar lines of pigment stretching out after the manner of retinal vessels. The presence of a spot of choroidal atrophy which interrupted the continuity of one of these streaks supports the view that they are not angioid.

W. G. REEDER.

EAR

Simon, R. M.: A Case of Ménière's Disease. *Brit. M. J.*, 1915, i, 282.

By Surg., Gynec. & Obst.

After reporting a typical case of this affection, the author makes the following observations:

1. The only useful treatment consists in the correction of imperfect digestion, hypermetropia, anæmia, and any other symptomatic conditions, but chiefly in the avoidance of fatigue.

2. Hæmorrhage is not the cause of every attack of giddiness occurring in this affection.

3. Most cases occur in people of advanced middle age, and a large proportion of them have acquired gout or the structures of the internal ear are undergoing ossification. While such changes might predispose to the attacks, these are almost certainly not the cause.

4. Many things point to a vasomotor disturbance being at the root of the trouble.

5. It is in the highest degree important to discriminate between the vertigo of Ménière's disease and that due to gastric causes, aortic disease, and arteriosclerosis. As many people are unaware that they are deaf on one side the examination of the ear should be a routine procedure in every case of vertigo.

6. It has been said that deafness follows Ménière's disease; it might if hæmorrhages occurred, but it is infinitely more common to find deafness, slowly and hopelessly progressing, preceding Ménière's disease.

OTTO M. ROTT.

Stucky, J. A.: The Relation of Pathological Conditions in Otorhinology to General Medicine and Surgery. *Kentucky M. J.*, 1915, xiii, 147.

By Surg., Gynec. & Obst.

The author pleads for a more intimate relationship between the internist, neurologist, and general surgeon on the one hand and the otorhinologist on the other. Various conditions in the field of each are mentioned as having a bearing on the conditions under treatment by one or the other group of physicians, and the patient can be properly treated only when there is more coöperation among the men practicing the various specialties. OTTO M. ROTT.

Clay, J. V. F.: Syphilitic Lesions of the Ear. *J. Ophthalm., Otol. & Laryngol.*, 1915, xxi, 99.

By Surg., Gynec. & Obst.

Syphilis may manifest itself in any portion of the ear, although primary syphilis of the external ear is seldom observed.

Gumma of the auricle has been observed by a number of investigators. These occurred in the tertiary period of the disease, and in the majority of instances the lesion was located on the anterior aspect of the auricle. One observer saw it on the posterior aspect. Usually, under adequate treatment, the ulcer heals with little deformity. The occurrence of chancre of the pinna may be mistaken for malignancy, and the presence of gummata may arouse suspicion of malignant growths.

Secondary manifestations of the external auditory canal occur as macular, papular, and pustular lesions, associated with general skin manifestations. We also find condylomata, ulceration, and chronic diffuse inflammation. These lesions give rise to

the usual symptoms. If discharge is present, it is usually of a peculiar fetid odor foreign to aural discharge from non-syphilitic lesions. Condylomata are found frequently in association with middle ear suppuration.

Ulcerative lesions have been studied by Schwartze, who describes them as usually annular and covered with dirty grayish-white exudate. The swollen edges of the ulcer cause a marked narrowing of the lumen of the canal. They are usually situated in the outer part of the canal. He found these lesions in ears with normal drums as well as in cases with associated suppurative middle ear disease. The glands in the vicinity of the ear are usually swollen.

Syphilitic conditions of the middle ear tract do not, unfortunately, present distinctive or pathognomonic manifestations by which they might be recognized. For this reason, too often, these lesions progress to hopeless and sometimes total destruction of all functional possibilities through either a proliferative adhesive inflammation or a suppurative destructive process.

Congenital lues is frequently a cause of rapidly progressive tympanic disease in the young. It is found associated with interstitial keratitis, but, unlike the ocular lesion, its tendency is to become progressively worse, with ultimate extension to the labyrinth.

Suppurative lesions of the ear of syphilitic origin are also without characteristics to guide us in the diagnosis. The process is rapidly destructive and tends to early involvement of the bone. The drum and ossicles break down rapidly, and there may be early extension to the internal ear, or involvement of the brain, lateral sinus, or facial nerve. Bruck speaks of a "melting" of the tissues that is foreign to suppuration non-syphilitic in origin.

Syphilitic invasion of the internal ear and auditory nerve usually occurs in the latter part of the second stage, or later. It may occur alone or in connection with tympanic disease. It constitutes one of the most frequent forms of primary disease of the aural perceptive apparatus and occurs in hereditary or acquired lues.

There are three clinical types of acquired syphilis of the internal ear: (1) that which appears in the late secondary or in the tertiary periods; (2) another type may be called the chronic syphilitic labyrinthitis; (3) the third type of labyrinthine involvement of acquired lues is that secondary to chronic suppurative middle ear disease.

The prognosis of luetic infection of the internal ear depends upon the type present. Congenital syphilitic labyrinthitis offers a hopeless prognosis so far as hearing is concerned. The acute acquired type offers a good prognosis if the condition is early recognized and active antisyphilitic medication administered. The chronic constitutional labyrinthitis offers a less favorable prognosis than the acute variety. The treatment of syphilis of the ear is that of syphilis in general.

Cleanliness and dryness are of great importance in the lesions of the external canal; in the middle ear suppuration, careful toilet of the canal, removing all discharge from this and the middle ear, is important. If necrosis has occurred, a cure cannot be hoped for, except through radical operative interference combined with active constitutional treatment. The adhesive middle ear conditions usually prove very resistant. The process is so rapid that marked changes have occurred before treatment has been established. In congenital cases treatment is disappointing. In acquired cases of non-suppurative middle ear lues, early antispecific treatment and proper local measures, such as keeping the eustachian tube patulous and attention to the pharynx, bring about happy results.

It would seem that the indications are not quite clear as to the use of salvarsan in syphilis of the labyrinth and auditory nerve, but the opinions advanced, and observations made, seem to favor the theory of syphilitic poisoning of the nerve rather than a toxic action of the drug.

Beck, J. C.: Diagnosis of Intracranial Complications in Diseases of the Middle Ear and Accessory Sinuses of the Nose. *J.-Lancet*, 1915, xxxv, 119.
By Surg., Gynec. & Obst.

The intracranial complications considered are: (1) meningitis, (2) sinus thrombosis, and (3) brain abscess.

The cardinal symptoms of any of the above are:

1. Pain or headache—very persistent and quite intense.
2. Nausea and vomiting—constant, especially early in the disease.
3. General septic appearance—quite manifest.
4. Impaired vision due to choked disc.
5. Disturbance of temperature, pulse, and respiration.
6. Definite focal symptoms of brain localization.
7. Data from blood and spinal fluid examinations.
8. Röntgenographic findings.
9. Exploratory operation and treatment, sometimes necessary to make a diagnosis.

The author then takes up the discussion of (1) serous meningitis, (2) septic meningitis, localized and diffuse, (3) sinus thrombosis, and (4) brain abscess, stating in detail the findings peculiar to each condition.

He concludes with a helpful quotation from Neumann as to the differential diagnosis between meningitis, sinus thrombosis, and brain abscess:

"A patient that has meningitis is one that wishes to be left alone and allowed to sleep, although when roused is not particularly irritable. If he has brain abscess he is constantly very irritable and difficult to manage; while a patient that has sinus thrombosis, when he is free from the chill and fever, is very pleasant, apparently well."

OTTO M. ROTT.

Lillie, H. I.: Fulminating Otitis Media; Mastoiditis; Extensive Sigmoid Sinus Thrombosis; Ligation of Internal Jugular Vein; Recovery.
J. Mich. St. M. Soc., 1915, xiv, 183.

By Surg., Gynec. & Obst.

The author reports the case of a male, aged 19 years, who complained of pain and fullness in the right ear. Examination showed that the mucous membrane of the tonsils, pharynx, and epipharynx was red and oedematous. The canal of the right ear was tender, the membrana tympani red along the handle of the malleus and Schrapnell's membrane. Four hours later the symptoms increased and the membrana tympani became bulged; freely incised, it evacuated pus and blood. The symptoms increased for 5 days, when the patient had a chill; temperature 105.2° , leucocytes 27,750.

Complete operation was performed; there was no septic clot in the sinus; no hæmorrhage from the lower end; the jugular vein was ligated. Six days after operation the patient complained of being very chilly and had a temperature of 105° ; 2 days later, leucocytes 23,000; neck wound reopened and a large clot removed from the upper end of the jugular.

The author emphasizes the following points: mastoiditis occurs within 48 hours, and sinus involvement in 96; the importance of the leucocyte count and graphic chart as guides; the necessity for early operation; the presence of acute nephritis in 5 days and the cessation 6 days later; the use of collodion and gauze dressing to reduce the size of the scar from open wounds; and the favorable prognosis if operated upon early, the mortality being reduced from 45 per cent to 5 per cent.

A. SPENCER KAUFMAN.

Welton, C. B.: Mastoiditis and Mastoid Abscess Without Suppuration from the Middle Ear and Without Any Apparent Ear Inflammation.
J. Ophth. & Oto-Laryngol., 1915, x, 86.

By Surg., Gynec. & Obst.

The author reports seven cases of acute mastoiditis without otitis media occurring in his practice during 1914. Two cases showed no signs of otitis media, three cases showed some slight injection or bulging of the membrana tympani, but no suppuration. One case had discharge before mastoid involvement, but was dry when examined. Two cases recovered without operation.

In the first case, that of a man 38 years old, the membrana tympani was normal in appearance. Operation was followed by recovery.

In the second case, a woman, aged 25, the membrana tympani was normal. She had difficulty in deglutition, due to paralysis of the pharyngeal muscles; two days later facial paralysis set in, 7 days later diplopia and left optic neuritis developed, accompanied by pain and tenderness of the left mastoid. Pneumonia was present. The patient recovered without operation.

The third case, a male, aged 3 years, had had some discharge for two days, a week before the author saw him. Six days later he had a number of convulsions. The convulsions could be produced by mastoid pressure; the patient was in a semicomatose condition, the pupils dilated, there was paralytic strabismus, temperature 102° , Kernig and Babinski's signs were present, there was rigidity of the neck muscles. The membrana tympani was normal. Operation was followed by death. No post-mortem was held.

The fourth case, a girl, 10 years old, had an attack of acute coryza, followed by pain in the right ear for 5 days. When the author saw the child the membrana tympani was red and bulging, and there was postertier superior swelling of the canal. Operation was followed by recovery.

In the fifth case, a male, 13 months old, the membrana tympani was red, and there was swelling behind the ear. Recovery followed the operation.

In the sixth case, a female, aged 28, the membrana tympani was red, following an attack of influenza two weeks before. The mastoid was tender; paracentesis gave no relief; mastoid operation was followed by recovery.

The seventh case, a female, aged 48 years, had had influenza two weeks before; for 4 days before examination she had had severe pain in the left ear; she was semiconscious, had facial paralysis; showed slight Kernig's sign; increased knee-jerk; membrana tympani red; Schrapnell's membrane swollen. The patient recovered without operation.

The author found one reference to this condition by MacKenzie. In cases of this kind he feels there has been a "fugitive" otitis media, but involvement of the mastoid progressed. He urges careful examination of the auricle, canal, drum, and mastoid.

A. SPENCER KAUFMAN.

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Metzenbaum, M.: Scopolamine in Nose and Throat Operations. *Laryngoscope*, 1915, xxv, 95.
By Surg., Gynec. & Obst.

The author's observations are drawn from the use of scopolamine given before 2,200 operations on the ear, nose, throat, and neck during the past five years.

Adults receive .01 gr. usually by mouth one-half to one hour preceding all operations.

Children are given a .02 gr. coated pill with a little water one-half to one hour before operation.

The conclusions reached are:

1. In operations on the nose and throat under cocaine or novocaine the preliminary administration of scopolamine is of the greatest value. The usual fretful, excited, restless patient becomes quiet, interested, and helpful, so that in the removal of tonsils or foreign bodies from the throat, the patient will often hold the tongue-depressor and be entirely free from the usual constant desire to spit, cough, gag, and explode the breath.

2. In nasal operations the preliminary administration of scopolamine lessens the amount and strength of cocaine or novocaine required, and anaesthesia of the bony areas is decidedly more effective, as in the opening of the antrum or sinuses.

3. When scopolamine is administered in physiological doses it seems free from any immediate or remote detrimental effects, while its benefits are to quiet the patient, benumb his sensibilities, lessen the amount of mucus in the throat, and lessen his irritability to such a degree that he requires less local or general anaesthesia to complete the operation.

OTTO M. ROTT.

Gundelach, C. A.: Posterior Nasal Operation by Means of the Nasopharyngoscope. *Laryngoscope*, 1915, xxv, 83.
By Surg., Gynec. & Obst.

The author advocates the use of the nasopharyngoscope to facilitate and render more thorough operations in the posterior region of the nasal cavity and also to aid in diagnostic work in this region.

By means of the nasopharyngoscope the following has been accomplished:

1. The line and angle of attachment of the middle turbinate with the nasal wall has been determined, and this is of value in making injections into the nasal ganglion for neuralgias.

2. Much valuable information is obtainable after operation on ethmoid cells to determine the result of the work.

3. A sphenoidal sinus can be entered by the instrument and its interior examined, as can also the antrum. By this means a hyperplastic sphenoiditis can be diagnosed with certainty.

In this connection the author states that the nasopharyngoscope means to the rhinologist what the introduction of the ophthalmoscope meant for the ophthalmologist.

OTTO M. ROTT.

Guggenheim, L. K.: Coccobacillus Foetidus Ozænae Perez Vaccine in the Treatment of Ozæna. *Interst. M. J.*, 1915, xxii, 129.

By Surg., Gynec. & Obst.

Concerning the results of this method of treatment the author quotes from the work of Hofer and reports on 25 cases which he personally observed.

The following general conclusions are reached:

1. The author is convinced by the results of Hofer's animal experimentation that the coccobacillus foetidus ozænae Perez is the true cause of ozæna.

2. The vaccine made with the Perez organism exerts a beneficial effect in the majority of ozæna cases.

3. The Hofer method of treatment is in its infancy, so we may expect far better results as the technique in the preparation of the vaccine and in its administration improves.

4. Because of the soluble toxin produced by the Perez organism, we have every reason to believe that in time a successful antitoxin will be produced which will, of course, be preferable to the vaccine now used.

OTTO M. ROTT.

Grayson, C. P.: The Exploratory Opening of the Sphenoid Sinus. *Laryngoscope*, 1915, xxv, 65.

By Surg., Gynec. & Obst.

By "exploratory" the author means an opening that can be made so extemporaneously with so little discomfort to the patient and so little derangement of his ordinary pursuits that it may be employed for merely exploratory or diagnostic purposes.

The point of exploration advocated as being the one most free from danger is 2 or 3 mm. above the line which divides the anterior from the inferior surface of the sphenoid body and close to the attachment of the ethmoid plate in the middle line. The instrument used is a straight drill, tipped with a conical burr 6 mm. in length and measuring 2.5 mm. from its point to its greatest diameter. The drill which makes an opening 2 mm. in diameter is intended to be manipulated by the hand only, the thumb and finger being sufficient to rotate it.

In the following conditions the author has found exploration of the sphenoid of great use:

1. When there is present a stream of pus in the recessus sphenothymoidal.
2. Certain cases of neuralgia of the fifth nerve.
3. Nasopharyngeal catarrhs, those of distinctly mucopurulent and irritative type. OTTO M. ROTT.

Cary, E. H.: Spontaneous Rupture of Lateral Sinus with General Septicæmia in Ulcerating Sinusitis. *South. M. J.*, 1915, viii, 147.

By Surg., Gynec. & Obst.

This case was one in which there was a neglected purulent middle ear and mastoid infection accompanied by severe headaches and mastoid pains, followed by a rapid and profuse hæmorrhage from the affected ear; about two teacups of dark blood was lost, after which symptoms of septicæmia developed. Four days later the patient was brought to the hospital and an operation performed. Immediately after removal of the first strip of thin cortex there was profuse hæmorrhage. The thin cortex immediately over the area where the lateral sinus should have been could not be removed on account of bleeding. The wound was packed and the patient put to bed with the hope of attacking the region after a clot had formed. The internal jugular vein had at first been excised, at which time it was seen to be collapsed. In the afternoon of the third day the patient was taken to the operating room and in ten minutes was dead. Exploration of the field revealed the absence of an anterior wall of the sinus.

The author concluded that death was due to embolus caused by release of pressure when the cortex was removed at the second operation. The emboli passed from the remaining part of the sinus back into the torcular herophili, thence into the sinus of the other side, on to the heart, and likely to the coronary artery. OTTO M. ROTT.

Bliss, M. A.: The Importance of the Paranasal Sinuses in the Explanation of Pain in the Face, Head, Neck, and Shoulders. *Am. J. M. Sc.*, 1915, cxlix, 230.

By Surg., Gynec. & Obst.

In order to illustrate the influence of air sinus infections on the nerve-trunks and ganglia, causing widespread referred pain which can be relieved only by recognizing its origin, the author presents reports of three clear types, with the method of treatment employed.

The following observations are appended:

1. The sphenopalatine ganglion is small (5 mm.) and by no means easily struck, whether approached with a straight needle from below the posterior tip of the middle turbinate or by means of a curved needle entering through the sphenopalatine foramen, and whether these attempts be made under the view of the Holmes pharyngoscope, because it is impossible to know the exact position of the ganglion in any case.

2. It is probable that instillation of alcohol into its immediate environment is efficacious, but not to the same degree that follows when it is placed directly in its substance.

3. It requires three months before conclusions can be reached regarding the result of the injection.

OTTO M. ROTT.

Milligan, W.: Inoperable Angiofibroma; Maxillary Antral Sarcoma. *Proc. Roy. Soc. Med.*, 1915, viii, *Laryngol. Sect.*, 42. By Surg., Gynec. & Obst.

The left nasal cavity was firmly blocked by a polypoid growth traversed by somewhat enlarged blood-vessels, the soft palate was pushed forward, and the left side of the face was swollen.

Operation was attempted but had to be abandoned because of the furious hæmorrhage. Removing the packing after 48 hours caused more bleeding. A radium emanation tube was inserted into the middle of the growth. There was no return of hæmorrhage, and in three weeks no trace of the growth was present.

OTTO M. ROTT.

Lewis, J. D.: Empyema of the Nasal Accessory Sinuses. *St. Paul M. J.*, 1915, xvii, 61.

By Surg., Gynec. & Obst.

The author's views are as follows:

1. Diseases of the nasal accessory sinuses are more prevalent than generally supposed.

2. The subjective symptoms are never clear, and are frequently misleading.

3. The objective symptoms are almost always pathognomonic.

4. The present methods of diagnosis leave little to be desired.

5. These diseases are frequently responsible for impairments of the general health.

6. Complications, unless induced by faulty surgical technique, seldom prove fatal.

7. Appropriate treatment rarely fails to effect a cure.

The principle of treatment is to establish permanent drainage, insure ventilation of the cavities, and remove all diseased parts with a minimum sacrifice of tissue and the avoidance of deforming external operations.

Conservative measures comprise the following procedures:

1. Local applications of cocaine and adrenalin.

2. Suction.

3. Infraction of the middle turbinate or removal of the anterior end.

4. Remove septal deformities when necessary.

5. Curettage of the anterior ethmoidal cells and the naso-frontal duct.

Where radical methods are demanded the author prefers the Knapp or Davis modification of the Killian operation for frontal sinus work.

For ethmoidal work the Mosher intranasal procedure is advised.

For sphenoidal, when involved without the ethmoids, the Grayson drill method is selected.

For antrum work the author prefers the preturbinal method, which conserves the inferior turbinate.

All of these methods are described in detail.

OTTO M. ROTT.

Watson-Williams, P.: The Pernal Operation for Frontal Sinus Suppuration by the Anterior Route. *Lancet, Lond.*, 1915, clxxxviii, 362.

By Surg., Gynec. & Obst.

The author believes that the external (Killian) operation on the frontal sinus has not fulfilled the brilliant hopes that were raised at the time of its introduction, and that the earlier successes reported have been discounted by instances of septic osteomyelitis, an almost universally fatal complication, even in the hands of skillful operators. In many cases very grave deformity has resulted, and, in addition, the operation often fails to give the relief sought.

Intranasal methods for obtaining drainage and space for lavage by the removal of the anterior end of the middle turbinate have long been practiced and are of value, but are often, also, insufficient to effect a cure. To Ingals is due the credit of introducing the method of following up the frontonasal duct and entering the sinus through the normal ostium. All subsequent intranasal methods are developments of the Ingals operation. The author believes most of these to be dangerous, and advances his own operation as being comparatively safe. After a review of the topographical anatomy and calling attention to the agger nasi cells lying in front of the free end of the middle turbinate, he points out that it is the presence of these cells that Mosher has utilized in his well-known operation, but Mosher works from above downward, while the operation advocated by the author begins below and anterior to the middle turbinate and continues upward to the frontal sinus, "without destroying any part of the vertical plate of the ethmoid," a point he thinks of much importance, since he says it does not involve fracturing through the vertical plate in close proximity to the cribriform plate and laying open venules and lymphatics in this dangerous area to infection. Williams' operation may be done with cocaine, but he much prefers general anæsthesia. His technique is simply to cut through the most anterior attachment of the middle turbinate with a conchotome and continue biting upward through the anterior cells to the crista nasalis. In the same manner the cells lying behind the duct are then removed to any necessary extent. Sounds are passed into the sinus and all projecting edges removed. Often this will suffice, but if enough room has not been secured by these measures, the nasal crest may be rasped away, but it is much preferable to use a guarded burr for this purpose. The advantage claimed for the burr is that the mucous membrane of the posterior wall is left intact and the bone only laid bare anteriorly.

He advocates the use of from 30 to 50 ccm. of polyvalent antistreptococcus serum immediately before the operation, followed by the administration of sensitized vaccines. Sounds should also be passed at regular intervals after the operation to ensure the permanency of the opening made.

Over one hundred frontal sinuses have been treated in this way by the author, who claims that many have been cured and nearly all relieved. In a few instances he was unable to reach the sinus perinasally.

GEORGE M. COATES.

Warren, E. L.: Plastic Operation for Dislocated Columnar Cartilage of the Nose. *Laryngoscope*, 1915, xxv, 81.

By Surg., Gynec. & Obst.

After injecting the region of the deformity subcutaneously with 2 per cent cocaine or novocaine, a vertical incision is made through the skin just in front of the mucocutaneous junction. Dissection is carried out by means of a dull narrow-bladed scalpel down to the posterior edge of the columnar cartilage, which edge is then grasped with a small, curved hæmostat forceps. The perichondrium is separated from the cartilage below to its lower end and above to the upper limits of the deformity, where the cartilage is cut across and the piece removed *en masse*. The redundant strip of skin is removed and the wound closed with three interrupted sutures. No packing is used.

OTTO M. ROTT.

THROAT

Casselberry, W. E.: Infective Lymphoid Growths of the Laryngopharynx, Secondary to Sinus Suppuration. *J. Am. M. Ass.*, 1915, lxiv, 576.

By Surg., Gynec. & Obst.

The qualities characterizing this type of lymphoid hyperplasia are:

1. A conspicuous enlargement of the smaller clusters and single follicles.
2. An apparently diffused lymphoid infiltration of adjoining tissue.
3. A decided disposition to redevelopment after excision.
4. A recognition of its situation as being in the pathway of a sinus discharge.

The sinus discharge need not amount to actual pus; hence the source may often be overlooked while the disease is present but in attenuated yet virulent forms.

The following are favorite sites for this type of hyperplasia:

1. In the vicinity of the eustachian orifice.
2. In the lateral angles of the pharynx.
3. In the tonsillar region.
4. In the tonsil itself (a) as an infective tonsillitis with semipurulent instead of cheesy substance in the crypts, or (b) as a perniciously active hyperplasia overlapping the usual bounds.
5. In the larynx, where the small follicles on the rim of the larynx may undergo an immense hyperplasia, developing into tumor-like growths, which occupy the space of the laryngopharynx, and heretofore known as "lymphoma." In two cases the author found this mass, by cultural, microscopic and vaccine methods, to be of microbic origin.

OTTO M. ROTT.

MOUTH

New, G. B.: Cystic Odontomata. *J. Am. M. Ass.*, 1915, lxiv, 34.
By Surg., Gynec. & Obst.

The author considers the subject under two classes—the simple cysts and the adamantinomata. The simple cysts are divided into two types: (1) those including dental or root-cysts, and (2) those usually called follicular. This paper reviews 26 cystic odontomata: 21 are of the simple type 1, 6 are of type 2, and 8 are adamantinomata; all are from the Mayo Clinic. Simple cysts of type 1 are the most common in the jaws. Magitot in 1872 published the first important work on the subject of cystic odontomata and attributed their origin to the development of embryonal dental tissue. Molassez in 1885 found masses of cells about the roots of teeth in adult jaws and concluded that they were the remains of the dental ridge, the epithelial cord, and the outer layer of the enamel organ, and concluded that all cystic odontomata were derived from this group of cells. In this series of 12 cases 6 occurred in the upper jaw and 6 in the lower. Of those in the upper jaw 4 were in the incisor region and one in the bicuspid.

In the lower jaw 3 were in the incisor region, 2 in the bicuspid, and one in the molar region.

It is a debatable point whether these cysts are derived from supernumerary anlagen or not, as they are frequently in the same location. Their development, according to consensus of opinion, is due to irritation or stimulation, as they are most frequently found in connection with teeth whose pulps have been lost, but may occur from irritation of erupting teeth or other peridental inflammation. They occur at almost any age; they contain fluid and leave an epithelial lining, which may in some places be lost.

Type 2, according to Bland-Sutton, represents an expanded tooth follicle. They occur with equal frequency in either jaw and are usually in the bicuspid and molar regions.

This type occurs during or shortly after second dentition, except those in connection with the third molar, which develop later in life.

It was noted that a tooth was missing from the arch and that a partially developed tooth was found in the cyst, the crown being usually completed and the root partially formed. While the cysts are formed in early life they are of slow growth. In one of the cases here reported the patient, a man 69 years of age, who had had a tumor of the angle of the jaw for 42 years, which within the last 6

months began to enlarge. It contained a partially developed molar and a specimen from the growth proved to be epithelioma.

The author reports a number of cases of adamantinomata from the literature and then takes up the pathology as follows: The adamantinomata on section present solid and cystic areas, the cystic areas being from pin-head to walnut size. They appear to have a smooth lining, and fibrous or bony septa are seen separating the various cysts which contain a thin yellowish fluid. The solid areas have a red tint and are granular owing to many minute cysts.

Microscopically the solid areas consist of a fibrous tissue stroma and columns of epithelial cells. These columns may be elongated, rounded, or arranged in the form of acini, and may present many irregular forms. Two types of epithelial cells are found: the typical columnar cell with the nucleus placed near the pole away from the stroma, and the differentiated cells from this type—the polygonal cell and a stellate cell, which form the main mass of the epithelial columns. These cells are analogous to the cells that form the enamel organ. Areas of transitional forms from the solid cords to the small cysts are seen. The stellate cells are seen undergoing disintegration, their place being taken by cystic cavities, at first quite small, then becoming larger.

Stellate cells gradually disappear and are replaced by the fluid of the cyst. As the cyst increases in size the columnar cells are left alone to line the cyst, while in the yet larger cyst these have disappeared and the wall consists of fibrous tissue only.

Diagnosis and treatment of types 1 and 2 are not difficult with the aid of the röntgenogram. The adamantinoma will show a multilocular formation and with the history and examination will offer little difficulty, except in cases of giant-cell sarcoma, where at times the differentiation must be made at the operation or by the microscope.

The treatment of cysts of the first group requires only thorough curettage and packing.

The adamantinomata require a more radical treatment, as the condition will recur if a small portion of the tumor is left; consequently a resection, if possible, followed by the implantation of a portion of a rib, is most satisfactory.

All of the 8 cases operated upon in the Mayo Clinic have been operated upon within the last two and one-half years, and as recurrence is frequent the cure of these cases can as yet not be determined.

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INTERNATIONAL ABSTRACT OF SURGERY

AUGUST, 1915

COLLECTIVE REVIEW

THE PRESENT STATUS OF RADIOTHERAPY

By A. HOWARD PIRIE, M.D., MONTREAL

AS the terms "dose" and "filtration" will be frequently mentioned it will be well to define what is meant by X-ray dose and filtered rays.

The unit dose of X-rays is known as 10 X. This is the quantity which causes temporary epilation. Half this dose is 5 X, and double it is 20 X. As ordinary white light is a mixture of light of varying wave-lengths separable into the colors of the rainbow, so the rays coming from an X-ray bulb are a mixture of rays of varying wave-length. Those of long wave-length are non-penetrating and are called soft rays, while those of short wave-length penetrate the tissues and are called hard rays. Both kinds of rays can be used for superficial treatment, but for deep treatment only the penetrating waves are of value. Therefore, for all deep treatments the non-penetrating rays are removed so as to preserve the integrity of the skin. This is accomplished by placing a sheet of aluminum from 1 to 3 millimeters thick between the X-ray tube and the skin. The rays are then referred to as being filtered.

SPLenic LEUKÆMIA

Splenic leukæmia has been treated by injections of mesotherium, but the results reported are somewhat discordant. Rosenow reports 5 cases. He injected an amount of mesotherium intravenously equal to 0.5 mg. radium bromide. In one case the leucocytes dropped after 5 injections (one per week) from 110,800 to 47,000. The patient was not improved in proportion, and the count soon mounted to 116,000. Under X-ray treat-

ment improvement was noted, and the leucocytes fell to 19,000. Later no therapeutic measure was of value, and the patient died.

External application of radium has been tried in myeloid leukæmia, 30 to 33 centigrams of radium sulphate filtered through 2 millimeters of lead being allowed to act for from 24 to 48 hours over an area of 500 to 600 square centimeters (Renon, Dégrais, and Dreyfus).

Spleens occupying the whole cavity of the abdomen (*sic*) shrank to normal size in 3 to 4 applications. Leucocytes dropped in 5 to 10 days from 330,000 to 70,000. Myelocytes disappeared, the red blood corpuscles increased, the general condition improved, the fever disappeared, and weight increased one kilo per week. Two to 18 months after the treatment was discontinued the symptoms returned, and the same treatment repeated did not produce the same results. The body seems to become accustomed to the radium, and it loses its power. The authors advise alternating the treatment, using radium for a time, benzole for a period, and then X-rays for another period.

Schüller reports favorably on the action of radium in splenic leukæmia. In one case radium and emanation, in all 350,000 milligram-hours, caused a fall in white blood corpuscles from 673,500 to 26,000 in two months, the patient gaining 8 kilos in weight in three months.

Another case treated by X-ray therapy, and kept alive from 1906 to 1912, had reached a stage where X-rays seemed to be powerless and the patient's condition hopeless. At this period ra-

dium, mesothorium, and emanations were used, in all 32,000 milligram-hours, as a result of which the patient improved, and six months later appeared to be cured. Another case Schüller reports is of interest in that it was a case of Banti's disease, with a very large spleen. The use of radium in this case caused diminution in the size of the spleen so that splenectomy was performed, and a month later the patient was apparently cured.

Renon, Dégrais, and Tournemelle report a case of splenic leukæmia as follows: The count showed white blood corpuscles 264,000; after 3 applications made over the spleen in 24 hours, using 25 centigrams of radium sulphate at 15-day intervals, the white blood corpuscles fell to 8,620, and at the end of a month the spleen became of normal size.

Cases which have ceased to respond to X-ray treatment do respond to radium, according to Renon. The difference in the effect produced by radium may be due to the blood passing and re-passing during the long application of the radium, and so becoming impregnated with its energy.

A. David says that radiotherapy produces rapid change in the leucocytic formula, but a time comes when radiotherapy is powerless. By the use of benzole the destruction was checked in the majority of cases, but anæmia did not disappear completely, as the drug acts on the red blood corpuscles and hæmoglobin. Improper use of benzole is liable to cause lesions of the liver and kidneys.

Parkes Weber reports a case of myeloid leukæmia which had already been treated by X-rays. The treatment was discontinued and benzole given for 70 days without result. After that X-ray treatment was begun again, and marked improvement followed, with diminution in the size of the spleen and liver and improvement in the blood count.

From a review of recent literature and our personal experience one need feel no hesitancy in stating that radiotherapy is the best treatment at present known for splenic leukæmia.

GYNECOLOGY

Radiotherapy in gynecology is of value in hæmorrhagic metritis and in fibroma uteri. In 1908 Albers-Schönberg reported the cure of uterine fibroids by means of rays. Since then several thousand cases have been reported by many observers. Among the later reports is that of Bécclère, in which he states that he has treated 74 cases of uterine fibroids. His technique is a sitting once a week, raying the right and then the

left side, each area being 10 cm. in diameter. A third portal of entry over the sacrum was often used. When the tumor is large, the abdomen is divided into three or four sections, each of which receives an application of the rays. The median line is not rayed. The skin focus distance is 18 to 20 cm., and an aluminum filter 1 or 2 mm. thick is placed 8 cm. from the skin.

The superficial dose is 6 X; hardness of rays used is 9 to 10 Benoist.

Bécclère's results in 60 cases are tabulated. Two cases 52 to 56 years of age showed no diminution in volume, but hæmorrhage was lessened, although it remained persistent. The anatomical changes in 50 cases are as follows:

No change in 2 cases.

Diminution of 2 cm. in height in 1 case.

Diminution of 4 cm. in height in 1 case.

Diminution of 5 to 6 cm. in height in 12 cases.

Diminution of 7 to 9 cm. in height in 11 cases.

Diminution of 10 to 13 cm. in height in 9 cases.

In 8 cases the disappearance of the tumor was almost complete, although it had extended from 6 to 11 cm. above the pubis. Thus the success attained was 96 to 97 per cent. All the cases had been chosen by gynecologists. Bécclère believes in a direct action of the rays on the actual tumor. Before the menopause diminution of the fibroid occurs almost without exception after the first few weeks. This is noted before suppression of the menses. After the menopause fibroids which develop or which continue to grow begin to grow less under X-ray treatment. Diminution in volume occurs in all directions in the tumor. Bécclère lays stress on the prognosis which can be given after the first few weeks. If he notes diminution in the volume after the first few weeks, the prognosis is good; if not, it is unfavorable. He believes that the rays should be directed to the uterus more than to the ovaries, and also that intravaginal application of radium should be used along with the external application of the rays.

Von Seuffert states that of 23 cases treated for fibroid, in 22 cases amenorrhœa and in one case oligomenorrhœa followed either immediately (3 cases) or after a variable period, of which the longest was 142 days in a woman of 31 years. The dose varied from 68 X to 761 X spread over different portals of entry.

Alexandroff obtained interesting results in 15 cases of fibroids. He considers radiotherapy the best treatment in uterine fibroids. The ovary produces a substance which causes metrorrhagia. X-rays acting on the ovaries retard the formation of this substance, and so metrorrhagia ceases.

This is of course a theory, but it is borne out by the observation recently reported, that the blood of a healthy woman just about to menstruate when injected into the veins of a woman suffering from amenorrhœa brings on a flow of blood in the latter.

Reifferscheid relates his results in the X-ray treatment of 49 cases of myoma from April, 1911, to September, 1913:

11 are still under treatment.

31 are cured; of these 27 developed complete amenorrhœa and 4 oligomenorrhœa.

2 showed marked improvement.

2 stopped taking treatment.

3 cases were operated on for different reasons.

The duration of treatment was 6 months at first, and 4 months later on, when he used larger doses: 430 X instead of 210.

Of 42 cases of menorrhagia, 7 are still under treatment, 27 are cured, 1 improved, 2 stopped taking treatment, and 4 were operated on.

The literature at present is so full of reports of successful X-ray treatment of myoma uteri and metrorrhagia that the writer feels that he need not enlarge on it further. He has omitted any comment on the work of such men as von Graff, 40 cases, with success in 31 of 36 cases; Kreuzfuchs, 29 cases treated, with 26 successes; and many other writers on this subject.

Analysis of these successes establishes the fact that myomata and menorrhagia in women over 40 are best treated by X-rays, and for younger women it is the treatment of choice where operation is contra-indicated.

The writer's experience confirms the results reported. He has seen myomata decrease in size and disappear and menorrhagia cease under X-ray treatment. He has seen complete cessation of menstruation follow X-ray treatment, and has also seen it reappear after cessation of treatment, after menstruation had been suppressed for three months. In fact, the ovaries behave under X-rays somewhat as the hairs of the head do. The hairs may be made to fall for two months and then grow again, or may be made to fall out permanently. In the same way the ovaries may be made to cease their function for three months or permanently, according to the dosage applied.

MALIGNANT DISEASE

Max Levy Dorn reports on the action of X-rays on malignant tumors in mice. When an infected mouse was irradiated with 80 X all over its body, it died, but when the rays were limited to the tumor alone, and as much as 100 X and

more were given, the tumor disappeared in a few weeks and the mouse lived. Dorn uses very hard rays and long sittings with long intervals. He reports two cases of sarcoma cured by X-rays, one after two years of treatment and the other after ten months. He also reports a case of lymphosarcoma cured after four months' treatment.

Cases of sarcoma and lymphosarcoma have frequently been reported cured by X-rays. The characteristic of these tumors must be determined, so that one may be able to recognize which are suitable for X-ray treatment.

Uterine and vaginal carcinoma have been treated by H. Chéron and Rubens-Duval. Their statistics are based on the treatment of 158 cases during the last five years. Their technique was to use as much radium as possible, with as much filtration as practical, in massive doses. In the 158 cases treated, comprising mainly inoperable cases or post-operative recurrences, they succeeded in having one certain cure anatomically verified, 93 very important regressions, of which 46 were apparent cures, and 62 marked improvements in particularly grave cases or irregularly treated cases. In some cases radiotherapy allowed surgical intervention, which had been previously impossible.

Malignant disease is being extensively treated by radium and mesotherium at present, and reports are appearing from time to time in medical literature. For a successful result the whole tumor should receive an intense treatment so that a severe reaction follows which destroys the tumor. Four such cases are reported by Kellock. In treating uterine carcinoma with massive doses of radium it is necessary to shield the surrounding healthy tissue, otherwise perforation into the bladder (Keitler) may occur.

Allmann also reports a rectovaginal fistula after 10,000 milligram-hours, and a fistula into the small intestine after 26,000 milligram-hours.

The use of radiotherapy in malignant disease may be summed up as follows:

1. When the disease is removable by surgery let the surgeon remove it.

2. When entire removal is not possible let the surgeon remove as much as he can and leave the way open for radium to reach what he cannot remove.

3. Surgery may become possible after the use of radium in a case inoperable before its use.

Radium should not be looked on merely as an "also ran" to an incomplete operation; but like a boring in the rock for the reception of dynamite the operation should be a preparation for the use of radium.

Hayward Pinch recommends 1 millimeter of silver as the best filter for radium, and urges the protection of healthy tissues, especially in the vagina. Packing with gauze is sufficient protection so as to afford the protective effect of distance. Pinch, who has charge of the Radium Institute in London, with a large quantity of radium at his command, recommends that every removable carcinoma should be removed by the surgeon. Treatment by radium yields most gratifying results in carcinoma of the uterus, and the effects of this treatment in inoperable cases are far in advance of those obtained by any other known medical or surgical method. He says that the complete disappearance of fungating growth, arrest of hæmorrhage and discharge, healing of ulceration, and relief from pain are phenomena of almost daily occurrence. Care must be taken not to use too much radium or destructive reaction may follow. After the treatment the patient must use a douche twice a day in order to prevent adhesive vaginitis. In carcinoma of the breast Pinch is less enthusiastic in his comment. Many patients exhibit a great susceptibility to radium, the primary growth becomes smaller, and infected glands and subcutaneous nodules lessen or even disappear. Little or no effect appears to be exerted in the prevention of metastatic deposits. In a few patients who had been under treatment for two years he noted that a stage was reached in the treatment when the response to radium failed, and the benefit derived became negligible. In Paget's disease he says the superficial lesion is usually speedily cured by radium, but in cases in which the patient is willing to submit to operation, that procedure should always be adopted.

Sarcoma and lymphosarcoma give excellent results from radium treatment, but melanotic sarcoma is uninfluenced by it. It is important to use large quantities of radium inside and outside of the growths. The best results are secured in sarcomata of the tonsil and the post-nasal space, the growths disappearing completely with six weeks' treatment (Pinch).

Petersen states that X-rays have a very varying effect on sarcomata. Some are refractory and increase in spite of X-ray treatment, while others show an astonishing sensitiveness to the rays and melt away like snow before the sun. Hitherto it has not been possible to establish the definite relationship between histological structure and radiosensitiveness. Petersen has collected 45 cases of sarcomata, recorded in the literature, reported cured by X-rays. These cases are the work of 25 radiologists. Some of

these apparent cures must be discounted, but others are cured undoubtedly, have stood the test of microscopic examination, and had no relapse for several years. Cases of fibrosarcoma, round-celled sarcoma, and spindle-celled sarcoma have remained cured for from 3 to 8 years. But it must be admitted that the percentage of permanent cures of sarcoma by X-rays is as yet small.

Heineke at the Tenth Congress of the German Society of Radiology gave some suggestions on the biological action of X-rays. Tumors have the same sensitiveness to X-rays as their parent cells; thus carcinoma of epithelial origin is less sensitive than lymphosarcoma. Periosteal sarcoma is very refractory to X-rays.

SKIN DISEASES

Ten years ago it was the custom to treat certain skin diseases by unmeasured doses of X-rays every few days until a reaction occurred. Now a similar procedure is often used, but each small dose is measured, so that the radiologist knows what to expect from his treatment; whereas formerly he continued the treatment until a reaction appeared and then discontinued it. Dore recommends such doses as 2.5 X every two or three days for superficial ulcers; 5 X every week for psoriasis; 10 X every 3 to 4 weeks for sycosis, ringworm, favus, certain alopecias, hyperidrosis, acne, and pruritus; 10 X at shorter intervals for rodent ulcer, carcinoma, and uterine myoma. The statement that ringworm and favus are efficiently cured by X-rays needs no comment. This has now been established for many years.

Hypertrichosis. When a hair is pulled out, the root remaining soon becomes a mass of young proliferating cells, which are more sensitive to the action of X-rays than the cells at the root of an indolent hair. It has therefore been proposed that the hairs be pulled out 5 days before the application of the rays, so that the proliferating cells of the new root may be easily killed by the rays. Chilaiditis has used this on upwards of 30 cases, and during two and one-half years has seen no late bad effects. The more numerous and strong the hairs are the longer time should the epilation be performed before raying. He filters the rays through 3 to 4 mm. of aluminum, and gives 16 to 24 X in a single sitting; 15 to 20 days afterward reaction appears and remains for two to three days.

Keloid was one of the early skin diseases treated by X-rays, and the method has proved of great value. The treatment should not be given oftener than once a week, using 3 X hard rays. Two months' treatment will cure a mild case.

It is essential for good results to have patience and go slowly. No reaction should ever be produced, but slight pigmentation may be produced. An extensive keloid may be removed by the surgeon, and thereafter X-ray treatment will prevent its recurrence.

Lupus vulgaris. An excellent article on radiotherapy and radium therapy in the treatment of lupus vulgaris is given by Belot and Nahan. Radiotherapy may be used as a destructant of the tubercles and the surrounding tissue or as a stimulant. The latter might be called the persuasive method.

The destructive method is attained by a dose of 40 X. This method should not be used owing to the pain caused and the long time required to heal the burn. Certain lupus patches exhibit a violent reaction after the application of 14 to 20 X. Even when a cure is brought about by the destructive method the resulting scar is apt to be unsatisfactory for several reasons. Two or three years after such a cure necrosis of the skin has been known to occur. Freund aims at avoiding any intense reaction, and uses small doses and hard rays.

The persuasive method is attained by giving 6 to 10 X with or without filters of 1 to 2 mm. of aluminum, according to the depth of the tubercles. In 10 to 15 days a slight erythema follows, with slight swelling. When the reaction has subsided another treatment is given. Marked improvement is soon evident, but it is not a cure, for the tubercles remain. The surrounding tissue is modified, the tubercles become isolated, and another method of destroying them must be used. When this improvement is noted radiotherapy should be discontinued in order to avoid atrophy due to excessive radiotherapy. A combined treatment, i.e., radiotherapy up to a certain limit and then destruction of the tubercle by electrolysis or Finsen light, brings about a real cure. This method is applicable in lupus tumidus non exedens, lupus ulcer, serpiginous non-ulcerative lupus, lupus vorax exedens, lupus of the orifices, and in severe ulcerated cases of lupus.

Lupus tumidus non exedens should be treated by radiotherapy until improvement is noted and the tubercle becomes apparent. The latter should be destroyed by electrolysis. Lupus ulcer should be treated as above in the same way; Finsen light may replace the electrolysis. If the radiotherapy has been too prolonged and atrophy of the skin has occurred Finsen light may produce a severe ulceration. The following is Brocq's every-day treatment at Hôpital St. Louis, Paris.

After one or two treatments of 8 to 10 X the apparent nodules are scarified once a week. Immediately after this scarifying 6 to 8 X of hardness No. 7 Benoist is given every two weeks. A filter is used if the nodules are deeply placed. The mildest reaction is aimed at. If the reaction is greater than was expected, it is best to wait till it has quite subsided before giving the next treatment. The X-ray treatments are discontinued when the lesion is replaced by a white cicatrix. Serpiginous non-ulcerated lupus is treated by the same method. Lupus vorax exedens is treated by a combination of scarification and radiotherapy.

Lupus of the orifices is treated by radiotherapy until improvement occurs and the tubercles become evident, when they are destroyed by electrolysis. Lupus on mucous surfaces is treated in the same way, but here radium should be used where the X-rays cannot be well applied.

Lupus secondary to deep tuberculosis should be treated by radiotherapy for one or two months until marked improvement is noted. Filtration through 2 to 3 mm. of aluminum should be used. Scarification or the galvanocautery should be used to complete the treatment. Lupus intracutabilis of Finsen occurs in 2 per cent or 3 per cent of the cases, and resists all treatment by X-rays and Finsen light.

Radium has just the same power as X-rays in the treatment of lupus, and no more should be expected from it than from X-rays. Wickham says that radium alone rarely cures lupus.

Mycosis fungoides yields to X-ray treatment. A case is reported by Rajat in which the dose used was 8 to 10 X every 8 to 15 days on different parts of the body. The improvement was rapid. Other cases are reported by Adamson and Pringle. Pringle observed a case for 15 years, giving the patient short irregular treatments whenever a new lesion appeared, the disease thus being kept in check but not cured.

Rodent ulcer and cutaneous epithelioma. Suquet gives his personal experience in 841 cases. His cures were 93 per cent of 841 cases treated; 724 were cured, 60 after a relapse. He gives 10 to 20 X at long intervals, but varies the dose according to the extent and depth of the lesion.

In regard to prognosis, Pinch states that (Hayward Pinch, the Radium Institute, of London, report for 1913) rodent ulcers are of two clinical types:

1. The hypertrophic nodular type, with slight superficial ulceration of a scaly character, which responds well to radium and yields most satisfactory results.

2. The excavating type, with undermined and overhanging edges, and a gelatinous base. This not infrequently proves very intractable, and repair is most difficult to effect.

In using radium it is best to give one powerful unscreened exposure, rather than short frequently repeated exposures. Rodent ulcer attacking cartilage, bone, or mucous membrane is very refractory. The orbital mucosa is, however, an exception; it is very amenable to the action of radium.

Leukoplakia patches on the tongue, cheek, and vulva are speedily removed by radium, but they seem to recur sooner or later. A slight superficial reaction should be produced (Pinch).

Nævus. Pinch states that if blanching is readily effected by gentle pressure the effect of radium will probably be satisfactory, but if great pressure is required, radium will not be so beneficial. Excessive dosage may cause telangiectasis. For a successful result a reaction should be produced, and this should be obtained by increasing the dose at intervals until the reaction appears.

Cavernous nævus does excellently either under radium or X-ray treatment. A pulsating vessel should be ligatured. The treatment should produce slight surface reaction.

Warts and papillomata yield readily to treatment by radium. The reaction need be only slight, and the resultant scar is scarcely noticeable.

Lupus erythematosus often responds favorably to radium treatment. Small doses at intervals of four weeks give the best results (Pinch).

Eczema. The antipruritic action of X-rays is due to absorption of small infiltration in the neighborhood of the nerve-endings. This, says Ritter, aids the cure in all cases of eczema. The actual cure of eczema by X-rays depends on a reaction of the tissues attended by nutritive and circulatory changes. Doses of 3 X 10 to 12 Wehnelt every 10 days for three treatments often effects a cure. Acute eczema should not be treated by X-rays, but chronic eczema of the hands, professional eczema, and eczema of the nails, as well as generalized eczema are suitable for X-ray treatment. Treatment of eczema of the anus and vulva constitutes a triumph for radiotherapy. Seborrhœic eczema has yielded to X-rays, but some cases are best treated by external applications. Radium has a similar effect to X-rays in the treatment of eczema.

X-ray dermatitis. The chronic form of this disease is seen on the hands of radiologists. Fortunately no new cases are developing, but for those who already have the disease the cure seems to lie in radium. Eugene Caldwell, at

the September, 1914, meeting of the American Röntgen Ray Society, related his own experience, and showed his hands as proof of the effectiveness of radium in curing ulcerations and warts due to X-ray burns. Ulcers and warts which had persisted for years and had caused great suffering were cured by single applications of radium. The dose was sufficient to cause a slough in the position of the wart or ulcer, and following this slough new skin appeared and the spot healed without pain.

Blastomycosis. F. E. Simpson of Chicago treated a patient, a man aged 24, who came under his observation at the Chicago Polyclinic Hospital with a lesion at the inner canthus of the left eye of about 2 square centimeters, involving both the upper and lower lids. The clinical diagnosis was confirmed by microscopic examination.

Radium treatment was tentatively advised. A radium varnish applicator, containing 40 milligrams of radium bromide, was applied, three hours' exposure being given in fractional doses in the course of three weeks. There was a slight inflammatory reaction, which caused no pain, and was followed by the complete disappearance of the lesion. Some weeks later two minute points at the extremities of the lesion on the upper and lower lids were seen. An exposure of 15 minutes resulted in complete recovery, which is still maintained. The writer believes that the cosmetic results cannot be exceeded by any other method. Not the slightest tendency to ectropion can be observed, and the site of the lesion is practically imperceptible.

Hyperidrosis is easily cured by X-rays. A dose of 10 X unfiltered rays 8 to 10 Benoist must be given every four weeks till six treatments have been given. The sweat glands are destroyed permanently. After the first treatment the condition is not improved and in some cases appears to be slightly aggravated. After the third treatment marked improvement is noted. The fourth treatment makes the patient quite comfortable, and the fifth makes the improvement permanent. If the treatment is carried farther the sweat glands are utterly destroyed and no perspiration takes place. The treatment has been successful in treating hands, armpits, feet, and face. The hands should be left with a slight degree of perspiration, as hands that are bone dry are not so pleasant for the patient as when a slight degree of perspiration remains (Pirie).

MISCELLANEOUS DISEASES

Sciatica. Sciatica is from time to time relieved or cured by X-rays. Meret of Rouen recounts a

case following typhoid, of five months' duration, which was completely cured by three sittings of about 2 X. Payenneville mentions another similar case, but 4 X were given at each sitting. Fourteen cases are reported in the *Archives d'électricité médicale* by Zimmern, Cottenot, and Dariaux, with three failures. In these 14 cases the roots of the nerve were rayed, as the authors look on sciatica as a chronic inflammatory lesion attacking the meningeal sheath or the cellular tissue around the roots of the sciatic nerve.

As an example of the sedative action of X-rays, a case is cited in which neuralgia following herpes zoster fifteen days after the disappearance of the vesicles was successfully treated by X-rays (Delhem and Chassard). A dose of 2 X was given at each sitting.

Acromegaly has been treated by X-rays since 1909. Four portals of entry are used for the rays—two temporal and two frontal. Penetrating filtered rays, 10 X every two weeks, was the dose used. Bécclère thus gave 58 sittings, and reports that headaches disappeared and eye symptoms improved. On the other hand, no improvement, though no advance, occurred in the deformity of the face and extremities. Menstruation remained suppressed. Bécclère sums up the indication and contra-indication for treatment thus: Indications for treatment are visual troubles due to compression of the chiasma at all stages of the disease. The earlier the treatment is begun the better for the patient. When bone changes have taken place X-rays prevent advance but do not influence the changes that have already taken place. It is while the disease is advancing that the rays have most effect. X-rays are contra-indicated when the disease has so far advanced that hyperfunction of the pituitary gland has given place to insufficient glandular function; i.e., arrest of hyperosteogenesis, weakness of muscles, sleepiness, cerebral torpor, falling hair, dry skin, and loss of weight and strength.

X-rays are at one and the same time the instrument of exact diagnosis and treatment for hypophyseal tumors.

Radiotherapy of hypertrophy of the thymus. Sidney Lange concludes that this condition should always be treated by X-rays and not operated on. Statistics show that death took place in 33 per cent of cases that were operated on, and no deaths followed radiotherapy. Radiotherapy is as suitable in urgent cases as in non-urgent, for three and one-half hours after the exposure involution of the thymus begins, and the symptoms begin to recede. In Graves' disease he thinks that the thymus should be rayed,

for it is enlarged in from 75 to 90 per cent of cases at autopsy. A case of hypertrophied thymus was treated by Brailion and Brohan, and two treatments effected a cure, 3 X being given at one time. Berard reports another case treated with 8 X filtered through 2 mm. of aluminum. After the first treatment considerable improvement was noticed, and after the fourth a cure was effected.

Raynaud's disease. Newcomet reports two cases of this disease in which a satisfactory result followed X-ray treatment. In each case the hands were treated for pain and ulceration by small measured doses of about 1 X, two or three treatments a week being given for several months. Healing took place and swelling was reduced. No reaction was caused by the X-rays at any time.

Spring catarrh. Radium at intervals of a fortnight should be given, increasing the dose at each application until a very slight inflammatory reaction follows; the granulations on the orbital conjunctiva gradually disappear. Radium will often cure the most intractable cases (Pinch).

Arthritis deformans is being treated by drinking radium emanation solution. The best results are procured in early cases, and no results are to be looked for in later cases with bony changes. Marked improvement has been noted in many cases, but the treatment is as yet in an empirical condition. The writer has noticed marked improvement in an early case of rheumatoid arthritis treated by X-rays.

Lymphoid tissue. The action of radium on lymphoid tissue is described by Heineke. He says that lymphatic tissue presents the greatest sensitiveness to radium. He used an ebonite capsule with a mica window containing 20 milligrams of radium. When this was placed on his own arm for 5 minutes it caused an inflammatory reaction and left a pigmented spot. Lymphatic tissue of the intestine and spleen of a guinea pig was exposed to this capsule for 5 seconds. This caused widespread lesions of the nuclei of the follicles, while a similar application on the skin caused no reaction. Nuclei of leucocytes begin to degenerate in the center of the follicle after an hour and a half, the maximum effect being reached after 4 to 6 hours. After the sixth hour the nuclear debris is removed by leucocytes and disappears about the tenth hour. From 12 to 24 hours afterward the phagocytes disappear, and if the raying has been intense the follicles retain no lymphatic cells. An hour's application to the surface of the abdomen caused considerable destruction of the lymphatic follicles

in the abdomen. This might explain the sickness following large doses of X-rays as applied by the Freiburg method for fibroid.

Lymphadenoma. Large masses of glands are reduced to small nodules by X-ray treatment, so that an apparent cure is obtained, but permanent cure is seldom if ever attained; patients die after a year or two when the glands have disappeared, just as they do without X-ray treatment. Life is prolonged by X-ray treatment, but this disease is not cured by it. The same is true of radium treatment.

Pulmonary tuberculosis. O. de la Camp and Kapferle have conducted independent experiments on rabbits which they infected with tuberculosis. Kapferle sums up his results thus: A surprising development of connective tissue, which is a sign of the tendency to cure, is the result of raying. The lung treated by X-rays presented a tendency to the envelopment of the tuberculous centers, while in the control animals the disease increased every day. The results obtained by de la Camp lead to the conclusion that hard rays frequently repeated is the proper method of treatment. After making his experiments on animals he proceeded to treat patients. Advanced cases were not favorably influenced, but in other cases the temperature came down to normal and the appetite revived. Too large a dose injures the patient and accelerates the disease. The proper dose is the secret of proper treatment in this as in all other diseases. Of 15 cases of pulmonary tuberculosis treated by X-rays, 4 were far advanced and showed no improvement, the others were favorably influenced. Other observers have tried the effects of X-rays on pulmonary tuberculosis with satisfactory results. At the Tenth Congress of the German Society of Radiology, Frankel of Charlottenburg reported on over 80 cases since the year 1910. He says that the results are very encouraging. The irritating action of the rays calls forth an overproduction of antibodies. The chest and spleen should be rayed. Moderate doses should be given in slight cases. In 57 cases the bacilli disappeared from the sputum. Elevation of the temperature at the beginning of the treatment is a favorable sign, and is probably due to the liberation of toxins with commencing immunization, followed by a fall in temperature.

Mollard recounts a case of tuberculous peritonitis in a child of 4, too far advanced for surgery, in which after the fourth treatment, with 10 X filtered through 3 mm. of aluminium, the abdomen decreased 8 cm., ascites disappeared, and the patient gained a pound in weight.

Tubercular glands have been treated for many years by X-rays, and certain facts are now established as to the value of the treatment.

1. The gland does not completely disappear. It shrinks. One swollen gland of rapid development in a young child otherwise in good health disappears under X-ray treatment in a short time.

2. Voluminous masses of glands become discrete, and the glands shrink slowly to small hard cores. Multiple small hard movable glands in the neck are not affected by radiotherapy.

3. A fluctuating gland occasionally disappears without evacuation, but it is better to aspirate and continue the radiotherapy. When fistulae and keloid growths are present X-ray treatment hastens the drying up of the fistulae and smooths down the keloids.

Technique. Treatment should be extended beyond the enlarged glands in order to affect those not visible nor palpable, but which, nevertheless, are already infected.

X-rays of penetration 8 B filtered through 1 mm. of aluminium should be used, giving 8 to 10 X every fortnight; in children 6 X is sufficient. It is very important to stop the treatment at the earliest possible period; i.e., when the glands have definitely grown smaller. Further treatment is useless and harmful. Some of the worst cases of telangiectasis have been produced by prolonging the treatment. If the skin is reddened twice by X-rays there is great danger of telangiectasis occurring a year later.

Treatment of hypertrophy of the prostate by X-rays. Haret prefers to ray the perineum directly, and not through a rectal tube. He uses hard filtered rays. Cases of hypertrophy of the glandular tissue only are suitable for treatment. Thus long-standing cases are less amenable to treatment than early cases. He quotes several typical cases, such as that of a man of 67 years, who had been troubled with frequency for some years. He had retention, moderate hypertrophy, soft for the most part, pressing on the front of the canal. After the second treatment the patient micturated normally. After six treatments the prostate was much diminished in size. Haret gave 6 X No. 7 Benoist once a week. He quotes other similar cases. His final results are symptomatic cure with diminution in the size of the prostate. Only true glandular hypertrophy should be treated. Improvement should be observed before or after the fourth treatment.

Since the discovery of X-rays their power has been tried on nearly every disease, and in a small proportion they have done good or effected a cure. But one condition has escaped a trial

of the rays until lately; namely, increased blood-pressure. As increased activity of the suprarenals would cause rise of blood-pressure an attempt has been made of late to use the power of the rays to reduce glandular activity by turning the rays on the suprarenals. Sergent and Cottenot report their results in 12 cases of hypertension. Of these 11 were benefited by the treatment, the pressure being reduced for the maximal pressure from 2 to 5 cm. mercury. This reduction persisted for 8 months to a year. No effect was noticed on the kidneys either at the time of treatment or afterwards.

CONCLUSION

The curative power of X-rays lies in the function of the cell acted on and the object aimed at. The function of the cell decides whether it is rapidly growing or comparatively stationary in its growth. The former are more radiosensitive than the latter. All cells can be stimulated, reduced in function or in growth, or destroyed, and we must decide which action of the rays is the one we desire to use. Under these three headings can be classified the diseases influenced by X-rays as follows:

Diseases which benefit by X-ray stimulation.

Arthritis deformans (early)	Neuralgia
Eczema	Pruritus
Leukæmia	Psoriasis
Lung tuberculosis	Sciatica
Lupus	Tubercular glands

Diseases which benefit by reduction of tissue activity.

Acromegaly	Hypertrophied thymus
Carcinoma	Menorrhagia
Exophthalmic goiter	Myoma uteri
High blood-pressure	Ringworm
Hyperidrosis	Rodent ulcer
Hypertrophied prostate	

Diseases which benefit by destruction of cells.

Carcinoma	Nævus
Hyperidrosis	Rodent ulcer
Hypertrichosis	Sarcoma
Myoma uteri	Warts

Untoward effects of X-rays are noticed in radiologists who do not suffer from dermatitis. These consist in reduction of the number of white blood corpuscles from normal down to 5,500, a feeling of fatigue, a tendency to sleep, a reduction in percentage of hæmoglobin.

A report on the autopsy of a radiologist is given by Silvio Gavazzini and Spartaco Minelli. The doctor was 49 years of age, and appeared like a man afflicted with grave anæmia. He had been a radiologist for 14 years, and for a long time had suffered from X-ray dermatitis on his left

hand and on the left side of the face. The spleen and bone-marrow were considerably atrophied and appeared to have lost their hæmopoietic function. The testicles were atrophied like those of an animal experimentally sterilized. The progressive pernicious anæmia appeared to be due to the action of X-rays on the spleen and marrow.

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ABSTRACTS OF CURRENT LITERATURE

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OPERATIVE SURGERY AND TECHNIQUE

Addis, T.: Preparation of Diabetic Patients for Operation. *J. Am. M. Ass.*, 1915, lxiv, 1130.

One method of preparing diabetic patients for operation is to give them a sugar and starch-free diet. This is a useless procedure, because, although it may reduce the degree of hyperglycemia and the amount of sugar in the urine, it will not lessen any of the risks of operation. It is more than useless; it is dangerous, since it increases the chances of the onset of diabetic coma.

When operation is not immediately necessary, and especially in those cases where the decision as to whether or not an operation shall be performed rests largely on the question as to how much danger would be run by the patient after the operation because of his diabetic condition, it would be a great advantage to have some objective data to supplement the facts relative to this point, which can be gained by clinical observation. The quantity of sugar in the urine is no aid in this respect, for the special danger to life is the failure, not of the sugar, but of the fatty acid metabolism. The coma in which diabetic patients die after operation is, often at least, accompanied by the excretion in the urine of large amounts of unoxidized fatty acids, and there is good reason for believing that the condition is due to poisoning by these acids.

The estimation of the degree of impairment of the power of the body to oxidize fatty acids is, therefore, of prime importance in deciding whether or not operation is advisable in any particular case; but the amount of acetone bodies (fatty acids) excreted does not give a reliable indication of the degree of danger, because, although that amount may be small, the reserve power of the body to deal with these substances may be very slight, so that there may be a sudden failure under the special strain induced by operation, with the result that diabetic coma ensues. What is needed is a functional test of the fatty acid oxidizing power. A method is outlined whereby, with very simple methods, the amount of acetone bodies or of ammonia under certain fixed conditions is compared with the quantity found under circumstances which call for a marked increase in the catabolism of fatty acids.

The fear, excitement, and undernourishment of the patient, which frequently accompany opera-

tion, bring about a call for the utilization of the food stored in the body. This food consists of glycogen and fat, but the most easily available is glycogen, and there will be no very extensive breaking down of fat into fatty acids until the glycogen stores of the body are largely depleted. Even in cases in which the utilization of sugar is very defective, glycogen will diminish the amount of fat required in such emergencies. One aim of treatment should, therefore, be to bring about a storage of glycogen in the body before operation. The best means yet devised to this end is the oatmeal treatment introduced by von Noorden.

The inability of the kidneys to excrete large amounts of fatty acids is a factor in the production of diabetic coma. Giving alkali helps the kidneys in this work. Before operation, therefore, it is important to give alkali until the urine becomes alkaline and to maintain, if possible, this alkaline reaction after operation.

Neither success in inducing a storage of glycogen in the body before operation nor in keeping the urine alkaline is an absolute barrier against diabetic coma. They are only palliative measures. All those circumstances which unite to produce shock are factors which act as exciting causes of the condition known as diabetic coma. It is possible to mitigate the action of these agencies by the application of the principles of anoci-association.

EDWARD L. CORNELL.

ASEPTIC AND ANTISEPTIC SURGERY

Sippel, A.: Asepsis (Zur Asepsis). *Zentralbl. f. Gynäk.*, 1915, xxix, 17.

The author calls attention to several errors of aseptic technique that are of every-day occurrence and never thought of, resulting in many inexplorable infections and occasionally causing loss of life. It is the common practice in many operating rooms to cover the patient with a sterile sheath as the only protection against the dust and even dirt of the patient's clothing or of the hospital bedding. It is a grave mistake to expect the single sheath to act as a barrier against the underlying bacteria. The ordinary sheath is very permeable to bacteria, especially if soiled with blood or wet with solution. To convince oneself of this it is only necessary to place a little lampblack dust beneath a sterile

sheath and then touch or take hold of the part — one's hands will be black. The single pressing of the sheath against an underlying object is sufficient to force fine dirt, dust, or bacteria through the sheath.

A sterile gown will likewise permit bacteria or dust from the surgeon's clothes to penetrate it, especially during an operation lasting some little time. A sterile rubber apron or sheath should be beneath all sterile linen, as it prevents everything, even moisture, from penetrating it.

Another common error in obstetric cases is to permit the advancing head to recede without first cleansing it. Each time the head advances farther and carries bacteria from the vagina and surrounding skin along with it when it recedes. This is especially true if a coincident cystitis exists and urine containing bacteria is forced out with each pain. The author advises the use of a one per cent solution of bichloride to wipe the head after each pain before it is permitted to recede. In cases in which the intact bag of water is the presenting part at the vagina, it should be ruptured.

L. A. JUHNKE.

ANÆSTHETICS

Boldt, H. J.: *Spinal Anæsthesia in Gynecology.* N. Y. M. J., 1915, ci, 437.

The author does not consider that spinal anæsthesia was indicated as often as he used it, stating that, as a matter of fact, it is seldom preferable. One favorable feature of spinal anæsthesia he mentions is that one assistant may be dispensed with if necessary. He emphasizes the value of preliminary narcosis. He gives two doses of scopolamine 1/180 gr., and morphine 1/8 gr., at intervals of an hour before the spinal anæsthesia is begun. The third dose of narcotics may be necessary.

In his opinion, the most important objection to spinal anæsthesia is that the patient is conscious and aware of what is being done; hence the value of

narcosis. Headache has seldom occurred as a complication, since he allows as much fluid to escape as he injects, but when present it responds to large doses of bromide. Vomiting during operation rarely occurs. He has noted no paralysis. When it occurs he considers it due to faulty technique. For injection he prefers from 1.5 ccm. to 2 ccm. of a freshly prepared 10 per cent solution of novocaine.

W. H. CARY.

Mosher, G. C.: *The Latest Word on the Subject of Scopolamine Seminarcois.* *Surg., Gynec. & Obst.*, 1915, xx, 348.

The conclusions drawn by the author after visiting the medical centers in the East are as follows:

Scopolamine seminarcois is a hospital procedure and not universally successful. It can be safely used only by those who have been especially trained. Rigid adherence to the Krönig technique must be enjoined; otherwise failures should not be charged to it. As to hæmorrhage, unusual necessity for forceps, foetal asphyxia, or after-results of untoward nature, they were not observed in the cases the author witnessed. No caution is too extreme nor faithful watchfulness too exacting in the protection of mother and child, and no obstetrician should undertake the treatment unless he is willing to devote his entire time to the individual case after the first dose is administered until the labor is terminated.

There can be no doubt that the final benefit to be derived from this remarkable discussion will be that obstetrics will be put on a plane of dignity in the eyes of the laity as well as of the general medical profession. The work will again be classed as one of the three great departments of medicine. It must emphasize the need of establishing maternity hospital service up to the standard of the Chicago Lying-In, the Sloane, and the New York Lying-In hospitals, in every metropolitan community in this country.

EDWARD L. CORNELL.

SURGERY OF THE HEAD AND NECK

HEAD

Kopetzky, S. J.: *A Brief Consideration of Some Factors Concerned in Cases of Atypical Sinus Thrombosis.* *Laryngoscope*, 1915, xxv, 165.

The author reviews the processes by which the typical lesions are produced, these processes being divided into three groups:

1. The coalescent type of mastoid involvement in which the disease generally reaches the blood-vessels by contact and the lesion takes in and involves the blood-vessel walls, upon which granulations spring up. At a later stage, the lesion presents erosions of the sinus wall, or the sinus may be open, its interior being in communication with the abscess-like contents of the process.

2. The hæmorrhagic type in which the bony structure of the mastoid is not generally broken down. There may be destruction of bone around the antrum, but in the larger proportion of area which the mastoid process presents, the mastoid cells maintain their long cell walls intact. In these intercellular bony structures are small veins which either become phlebitic or frankly thrombotic, and portions of the lateral sinus are infected by means of these small veins. The sinus wall does not generally throw out defensive granulations. The sinus infection develops from within the blood-vessel, and the wall has a normal appearance.

3. The component lesions of chronic mastoiditis, which include those dependent on the presence of cholesteatomata, those due to bone necrosis and

caries, and those in which an acute infection supervenes upon a preëxisting otitis media purulenta chronica. In this group the sinus is reached by extension of the bone lesion to it, or through contact with purulent tracts ramifying through the diseased bone. The sinus rarely presents a normal appearance.

The processes by which the atypical cases are produced and which present factors which form a rational basis for the irregular features, for the atypical picture, and the untoward course are as follows:

1. The acute middle-ear infection, which in the young, because of dehiscence in the tympanic floor and the direct contact of the tympanic mucosa with the dome of the jugular bulb, or even without such dehiscence, the passage of virulent micro-organisms through the tympanic floor by way of the small veins communicating with the anterior chamber of the dome, and by reason of the peculiar swirl which the blood stream makes while in the dome, causes the formation of a primary bulb thrombosis. The vessel wall appears normal.

2. The acute middle-ear infections which reach the venous blood channels because of mal-development or non-development of intervening osseous structures and primary sigmoid sinus thrombosis or phlebitis develop as the sequelæ of the tympanic infection. The sinus appears normal. The author presents histories of two cases illustrative of the latter condition. No mastoid symptoms were present because no mastoid cells were there; but the sinus was in this locality and consequently there developed sinus symptoms rather than mastoid symptoms.

As to suggestions for diagnosing this condition, the author mentions that a sign of some moment when it occurs is the transmission of the respiratory movement to the ear discharge. Also of importance is the finding of an increase in the amount of the cerebrospinal fluid which is usually present in sinus thrombosis. The use of the Strauss apparatus is recommended as the easiest way to recognize this, but the observation should not be made with the patient under ether. Eye-ground pictures appear too late. X-ray may afford some help.

OTTO M. ROTT.

Cheatle, A.: Specimens of Tuberculosis of the Temporal Bone. *Proc. Roy. Soc. Med.*, 1915, viii, *Otol. Sect.*, 30.

1. The right temporal bone of an infant who died of general tuberculosis was shown in which there was demonstrated tuberculosis of the lining membrane of the middle-ear tract. Through a perforation in the posterior segment of the membrane the lining membrane was seen to be thick and nodular. The middle-ear tract contained cheesy pus; the vessels were intact.

2. Examination of the left temporal bone of an infant who died of general tuberculosis showed that the middle-ear tract was full of brown pus. There

was complete loss of the membrane and of the neck, short process, and handle of the malleus and articular process of the incus. The stapes was in position. There was caries of the promontory over the round window. The interior of the labyrinth was not invaded.

3. In the third case the external semicircular canal and fallopian canal were opened; the promontory was rough and carious and the round window was irregularly enlarged. The stapes was gone.

4. In this case the external semicircular canal was carious; the promontory was carious and perforated. The whole labyrinth was invaded, and secondary perforations had occurred through the superior semicircular canal to the middle fossa and through the posterior semicircular canal to the posterior fossa.

OTTO M. ROTT.

Brade, R.: Palliative Trephining Upon Choked Disc (Der Einfluss der Palliativtrepanation auf die Stauungspapille). *Beitr. z. klin. Chir.*, 1914, xciii, 624.

The author believes that it is agreed among ophthalmologists that choked disc is a symptom of increased intracranial tension, not at all constant and exhibiting considerable variations of degree. By former writers it has been considered an advanced stage of optic neuritis. This, however, is not true, it being entirely of mechanical origin, and hence may be associated with an optic neuritis in the same patient.

Especially difficult is the diagnosis if a choked disc develops on top of an optic neuritis, i.e., myopia; here the hæmorrhage due to congestion alone will clear the diagnosis. In general we speak of a choked disc if the prominence of the nerve head has become measurable ophthalmologically; i.e., if the refraction difference between the height of the prominence and of the fundus in the vertical field is $+3 D = 1 \text{ mm.}$

The different theories advanced and the experiments conducted to determine the cause all point to the fact that choked disc is not a constant symptom of pathological processes producing an increased intracranial tension, and that sometimes it occurs very early and at other times very late.

Choked disc is found in brain tumors, in meningitis serosa and tuberculosa, brain abscess, brain syphilis, hydrocephalus, in acute brain swelling (Reichardt), also in intra- and extradural and intracerebral hæmatomata, if death does not occur before the choked disc can develop. It is essential in all suspected cases of the above that we examine the fundus of the eye, as only in that way can a choked disc be diagnosed. Choked disc may be unilateral or bilateral, may be more severe on one side than on the other, and it may show changes from slight to extreme prominent mushroom formation, without it being possible to draw any definite conclusions in regard to the extent of the brain pathology present.

The dangers of choked disc consist in the fact that in its gradual development a progressive atrophy of the nerve-fibers result. The result of the atrophy

of course is impairment of vision to complete blindness. This danger makes it necessary that every case of choked disc be immediately examined for acuteness of vision and the field of vision. No distinct relationship exists between the degree of choked disc and acuity of vision, as only slight impairment may be present with a high degree of choked disc, and vice versa. At any rate a threatened blindness needs measures to counteract it immediately, and a very effective one is palliative trephining, which in the majority of cases cures choked disc as effectively as a herniotomy cures an incarcerated bowel within a hernia. We are indebted to von Hippel for the palliative trephining operation. True it is only a palliative measure, but since in the majority of cases we cannot attack the underlying disease we must at least utilize all measures to save the patient's sight. Lumbar puncture decreases intracranial pressure, but only temporarily. In tumors of the posterior fossa, however, it is contraindicated, even for diagnostic purposes. Its use in serous meningitis, hydrocephalus, and injuries of the cranium, is of considerable value and many good results have been obtained; but where permanent relief must be given and where lumbar puncture is inefficient trephining is to be considered. Puncture of the ventricles, puncture of the corpus callosum, and permanent ventricular drainage are severe operative procedures similar to trephining, and the result in many cases leaves much to be desired even though theoretically they may promise considerable relief.

Trephining remains the most important surgical procedure in choked disc. Considering the great diagnostic difficulties, especially in regard to the localization of the lesion, it is employed not only as a palliative measure, giving instantaneous relief, but exploration of the lesion can be undertaken through the opening and any radical work done if indicated. The author firmly believes that in any case in which the intracranial pressure has been increased, resulting in choked disc with threatening loss of vision, it is advisable to do palliative trephining to save the vision. The operative mortality naturally is high considering the nature of the cases, but the dangers will be much lessened if the operation is performed early when chances for cure are excellent. The danger of infection is overcome by strict asepsis and a good careful suture of the scalp. Drainage is to be avoided, so that a fistula will not form and later lead to infection. Prolapse of the brain does not always occur and many times is only transient. Injury to the brain is much more likely to occur if the trephine opening, through which the brain is forced is small. In large openings with clean edges a large prolapse causes no symptoms.

The site of trephining depends on the case. If a focal diagnosis is possible, the skull above the area of course is to be the site for trephining, rendering a radical removal possible. If an inoperable tumor is suspected from the first, then, according to Cushing, it is advisable to get as far away from the site of the tumor as possible, but the diagnosis cannot be con-

trolled. If no focal diagnosis is possible, two locations are open: the parietal and the suboccipital region. In parietal regions the right one will be chosen to avoid the speech center on the left side. The opening should be made close to the temporal region to utilize the temporal muscle in the closure. A large osteoplastic flap should be made to obtain a good view of the cerebral surface and because a large prolapse is less dangerous than a small one. The dura should be opened in all cases, and in those cases in which the pathology is not evident ventricular puncture and puncture of the brain should be undertaken. The dura is left open and the wound is closed without drainage, irrespective of whether bone is left or removed.

The author reports 36 cases of brain lesions treated by operation. In 24 of the 32 cases (4 died at operation) the choked disc receded entirely, the improvement manifesting itself on the day after operation, whereas the improvement in the vision occurred gradually. According to the author's experience the influence of palliative trephining upon choked disc is almost instantaneous. A complete failure of the operation was never observed, although it was impossible in some cases to restore the damage done by the prolonged choked disc. The patients must come to operation early, before atrophy of the optic nerve has occurred. The early operation will likewise decrease the high mortality of the procedure.

L. A. JUHNKE.

Dandy, V., and Blackfan, K. D.: Hydrocephalus Internus. *Beitr. z. klin. Chir.*, 1914, xciii, 392.

In a very extensive article the authors take up the subject of hydrocephalus internus from an experimental, clinical, and pathological point of view. The work consists principally of experimental work relating to the pathology of hydrocephalus internus. The numerous problems unsolved have been taken up one by one and the results rendered, together with the technique employed. It is impossible in a short abstract to go into the details of the subject, but the problems are taken up one after another, giving the authors' purpose, technique employed, and results obtained.

EXPERIMENTAL STUDIES OF HYDROCEPHALUS INTERNUS

1. Results of the closure of the aqueduct of Sylvius. The aqueduct of Sylvius is obstructed by means of a small cotton pledget. A suboccipital decompressive operation is performed in the median line, the pia and arachnoid are cut in the median line, and the foramen of Magendie is dilated. The cerebellum and roof of the fourth ventricle are elevated with a retractor. Through the dilated opening in the roof of the fourth ventricle a small pledget of cotton is carried on an introducer along the floor of the fourth ventricle into the aqueduct of Sylvius. The result of this procedure manifests itself immediately in the dog in a loss of balance, with a tendency to fall backward, slight dissociation

of the movements of the eyes, slight tendency to spasm but no paresis, frequent vomiting, drowsiness. These symptoms are transitory. A week later the general condition is almost normal; no lack of balance is evident; the dogs walk around but show no desire to play; the tendency to spasm is gone; the eye movements are normal; vomiting persists. Ten days later the dogs lie around, show no interest in their surroundings, react sluggishly to stimulants; there is a tendency to stupor; the eye movements are normal; vomiting is more frequent; there is a noticeable loss of weight. Thirty days after the operation the animals were killed. Autopsy findings: cortex extremely thin, ventricles extremely enlarged, intraventricular pressure so great that fluid shot out a distance of three feet after perforation. The third ventricle and lateral ventricles were extremely dilated, the vein of Galen normal, aqueduct of Sylvius obstructed completely.

2. Closure of the aqueduct of Sylvius followed by extirpation of the choroid plexus of both ventricles. After almost complete extirpation of the choroid plexus in both lateral ventricles and the closing of the aqueduct of Sylvius, hydrocephalus internus nevertheless developed, but to a lesser degree than if the choroid plexus had been left *in situ*. From these two experiments it will be seen that cerebrospinal fluid is formed in the ventricles, and apparently more rapidly than can be taken care of, and that the aqueduct of Sylvius is necessary for an avenue of escape.

3. Ligation of the vena magna Galeni and the sinus rectus. The possibility that a hydrocephalus internus can be induced by the closure of the vena magna Galeni or the sinus rectus has been brought out repeatedly. As most of the evidence, however, was based on pathological specimens, especially tumors of the corpora quadrigemina, pineal gland, cerebellum, or in the immediate neighborhood, it is very likely that the aqueduct of Sylvius was also compressed. The authors ligated the vena magna Galeni and sinus rectus in ten cases, and in all but one case the dogs remained entirely normal until killed three to eight months afterward, the brain showing no evidence of hydrocephalus, the collateral circulation being sufficiently developed to take care of the congestion. In one case the ligation included several of the communicating branches and a slight degree of hydrocephalus developed, but produced no symptoms.

FORMATION OF THE CEREBROSPINAL FLUID

1. The presence of the cerebrospinal fluid. Since Quincke introduced lumbar puncture, the presence of cerebrospinal fluid can be proven at any time. By taking pressure readings following lumbar puncture or ventricle puncture, the length of time it takes for the formation of a certain amount of spinal fluid can be estimated almost exactly. The rapidity with which the fluid is replaced can also be estimated in certain rare cases —

rhinorrhœa — in which the quantity reaches 200 ccm. or more within twenty-four hours.

2. Where the spinal fluid is formed. From the above-mentioned experiments it is clearly evident, as has been supposed, that the ventricles are the sites where the fluid is formed and that the choroid plexus is the principal factor in its formation. That there is an extracerebral origin is proved by the fact that in complete closure of the foramina of Magendie and Luschka, spinal fluid is obtainable by lumbar puncture, in small quantities.

3. Formation of cerebrospinal fluid. It can be stated conclusively that cerebrospinal fluid is formed in the ventricles. We have some direct, but mostly indirect, evidence which can hardly be doubted that the choroid plexus, and possibly also the ependyma, manufactures this fluid. Whether this formation is due to secretory or mechanical means, or to both, cannot be stated positively, in view of the indirect evidence which we possess. At any rate, a venous stasis results in a prompt and rapid increase, and if the collateral circulation (small vein of Galen or the beginning of the large vein of Galen) is not efficient, and if the overproduction becomes continuous, hydrocephalus will result. Whether the normal variations of the blood-pressure lead to transudation or secretion of the fluid cannot be determined by introducing substances into the circulation. The similarity of the fluid and blood, in so far as the salt content is concerned, seems to prove that the production in part is due to filtration. On the other hand, the histological character of the epithelium of the choroid plexus, the basic differences in the chemical constitution of the cerebrospinal fluid as compared to the blood and other serous fluids, and the impermeability of the producing membrane to substances contained or introduced into the blood stream render the acceptance of secretory activity or cell activity necessary. It is, therefore, highly probable that the cerebrospinal fluid is formed by filtration as well as by secretion.

ABSORPTION OF THE CEREBROSPINAL FLUID

1. Method of technique. The authors injected phenolsulphonephthalein into the cisterna cerebello-medularis. Indigo-carmin and methylene blue were not adapted as well as the above. The authors separated the muscles in the median line of the back of the neck and the membrana atlanto-occipitalis was exposed. This membrane lies directly over the cisterna cerebellomedularis. After careful incision of the dura, the arachnoid can be punctured and the desired quantity of fluid withdrawn. This can be replaced with the same quantity of a solution of phenolsulphonephthalein at body temperature without disturbing the normal pressure of the cerebrospinal fluid. While it is possible to obtain an excretion in the urine of 80 to 90 per cent of the phenolsulphonephthalein injected into the pleural or peritoneal cavity, only 60 to 90 per cent is obtained after injection into the subarachnoid space.

2. Rapidity of absorption. The phenolsulphonephthalein appears in the urine within five to seven minutes after injection and about 75 per cent of the total excretion appears in the urine within three to four hours, and the total amount in about eight or nine hours. In general it may be said that the cerebrospinal fluid is completely absorbed and rendered in about eight to twelve hours, or at least two to three times a day.

3. Does the absorption of the cerebrospinal fluid occur by the blood or by the lymphatics? The authors endeavored to determine by which route the absorption takes place, as no direct experimental evidence was obtainable. They injected the subarachnoid space as above with phenolsulphonephthalein, inserted a cannula into the thoracic duct, and obtained the total lymph stream. In other animals they obtained arterial blood from the carotid artery immediately after injection. While the phenolsulphonephthalein appeared in the blood stream within three minutes after injection and in the urine within six minutes, only faint traces were ever found in the lymphatic stream. These experiments prove conclusively that the lymphatics do not take part in the absorption of the cerebrospinal fluid and that the fluid is absorbed directly into the blood stream.

4. The absorption is a diffuse process in which the entire subarachnoid space takes place. The authors ligated the dura and spinal cord at about the level of the fourth cervical vertebræ and injected some of the phenolsulphonephthalein into the distal end of the spinal subarachnoid space after withdrawing some of the fluid. Its appearance in the urine occurred within six minutes and the total quantity excreted was as large as that obtainable from the cranial subarachnoid space.

5. Proof against the existence of stomato. India ink and lampblack were introduced into the cerebrospinal fluid after removal of some of the fluid. After two or three hours no proof of the existence of these bodies was available. Blood examined from the longitudinal sinus showed no particles. After one, two, or three hours the particles, however, were distributed evenly throughout the entire cerebral and spinal subarachnoid space, but there were no accumulations. Particles were adherent to the pacchionian bodies and on the outer sides of the sinuses, but never within or in their walls. Even after subjecting them to a pressure of 100 mg. no migration of the particles through the walls of the venous sinuses occurred. By these experiments it seems certain that the absorption is a general or diffuse process in which the entire subarachnoid space takes part. Since the absorption from the spinal arachnoid is proportionately as great as from the entire space, it is unnecessary to assume the presence of stomato.

6. Proof against the supposition that the pacchionian granulations are absorbing organs. This supposition originates from the work of Key and Retzius, and the view has had considerable support.

The pacchionian bodies are in reality diverticula of the arachnoid which protrude into the lumen of the sinuses and into the bones of the cranial vault. They are surrounded by a layer of arachnoid and a layer of dura mater, which render much more effective resistance against the transition of fluid than the simple endothelial covering of capillaries in the pia arachnoidea. The pacchionian bodies are also not present at birth, or are so very poorly developed that they may be overlooked. With increasing age and increasing intracranial pressure they become more pronounced and more numerous; in many animals they are not present at all. It would be exceedingly difficult or impossible to prove the transition of fluid through the pacchionian bodies during life; hence, we must depend entirely upon post-mortem evidence. It is possible to force fluid through the pacchionian granulations into the sinus, but it must be done under very high pressure. With still greater pressure it is even possible to force fluid from the subarachnoid space into the nasal cavity. The best proof against the absorption of the cerebrospinal fluid by the bodies is the manner of absorption from the subarachnoid space.

7. The absorption of the cerebrospinal fluid as compared to the peritoneal and pleuritic fluids. The absorption of fluid from the peritoneal and pleuritic cavity has been studied lately by Dandy and Rowntree. It was proved that the absorption of fluid from these cavities likewise is a diffuse process and is independent of the assumed positions of the body. It was further proved that the absorption is directly by the blood and not by the lymphatics. The absorptions from these cavities, however, is much more rapid than from the subarachnoid space. The time of appearance of phenolsulphonephthalein in the urine is about the same in all cases. Its disappearance from the pleural cavity and peritoneal cavity occurs much sooner, however.

ABSORPTION FROM THE VENTRICLES

It is perhaps interesting to mention some clinical evidence in regard to the absorption of cerebrospinal fluid. In seven cases of hydrocephalus the communication between the ventricles and the subarachnoid space was found completely closed, thereby an excellent opportunity to study the absorption of the ventricles being afforded. When phenolsulphonephthalein was injected into these ventricles its appearance in the urine was much delayed (30 to 40 minutes) and a quantity larger than 2 per cent was never excreted during the first two hours after its appearance in the urine. The excretions in the urine persisted ten days or longer, showing that hardly any absorption took place within the ventricles.

COMMUNICATION BETWEEN THE VENTRICLES AND THE SUBARACHNOID SPACE

From the above experiments it can be seen that the cerebrospinal fluid is formed within the ventricles;

that it is not absorbed here but in the entire subarachnoid space. It is also clear that the normal balance between absorption and production is dependent upon a sufficient communication between the place of formation and the place of absorption; i.e., between the ventricles and the subarachnoid space.

Six communication foramina have been described. The three foramina described by Bichat connecting the third ventricle and the two lateral ventricles with the subarachnoid space were later proved to be artificial communications. The central communication between the fourth ventricle and the subarachnoid space is the foramen of Magendie. The two later communications are the foramina lateralia of Luschka.

1. Experiments to prove the existence of functional communications. If phenolsulphonephthalein is injected into the ventricles after the withdrawal of a quantity of fluid, the substance appears in the spinal fluid within one to seven minutes. This is not due to increased pressure, as fluid is withdrawn first, and pressure is not applied. This observation is made in two classes of cases: one without hydrocephalus, and the other with hydrocephalus but without mechanical closure. Furthermore, if spinal fluid is withdrawn and phenolsulphonephthalein is introduced without increasing the pressure, the agent is found in the ventricles within a short time, proving conclusively that a communication between the ventricles and the subarachnoid space does exist, and that an interchange of substances can occur even against the current of cerebrospinal fluid from the ventricles. This transition of fluids from the subarachnoid space to the ventricles is of extreme importance, considered from the point of view of intraspinal anaesthesia and intraspinal medication in diseases of the central nervous system.

2. Where is the communication? If there is an occlusion of the duct of Sylvius or of the foramina of Magendie and Luschka and phenolsulphonephthalein is injected into the ventricles, the coloring matter does not enter into the spinal fluid. This was shown in a series of seven cases in which the occlusion was demonstrated at autopsy. This shows that there are no communications between the third ventricle and lateral ventricles on the one hand and the subarachnoid space on the other, or, in other words, that the foramina lateralis of Bichat do not exist. The aqueduct of Sylvius is the only canal by which the fluid can escape from the ventricles. The communication between the ventricles and the subarachnoid space must therefore be posterior to the aqueduct of Sylvius and must originate from the fourth ventricle. These communications are the foramina of Magendie and Luschka.

3. The functional capacity of the communications. To test the diffusion of phenolsulphonephthalein and the functional capacity of the communication, the colored matter was injected into the ventricles in two cases and into the subarachnoid

space (lumbar puncture) in two cases. Two and one-half hours later fluid was withdrawn from both places for comparison. It was shown that diffusion of fluids occurs in both directions promptly, and from the concentration figures obtained it may be said that diffusion from the ventricles to the subarachnoid space occurs approximately twice as fast as in the reverse direction. This is probably explained by the fact that the normal current is in that direction.

DIFFUSION OF SOLID PARTICLES IN THE SUBARACHNOID SPACE

To disprove the existence of stomato or other mechanical or special structures for the absorption of cerebrospinal fluid along the different sinuses, the authors withdrew some of the fluid through the membrana occipitalis and injected a suspension of lampblack particles. The animal was kept in narcosis for an hour and a half, and was then killed and frozen. Later examination showed a uniform distribution of the particles throughout the entire subarachnoid space of the brain as well as of the spinal cord. There was absolutely no accumulation of particles along the sinuses, or along any other point. With the exception of four pairs of cranial nerves, particles were not found along any of the others; and these four pairs of nerves have limiting arachnoid membrane along which the fluid is distributed. The uniform and rapid distribution of the particles is best explained by the pulsation of the central nervous system.

CLINICAL PATHOLOGICAL STUDIES ON HYDROCEPHALUS INTERNUS

Methods of technique. In observations employing phenolsulphonephthalein the following was ascertained: (1) The absorption from the ventricles. A ventricle puncture is made and 1 ccm. of the indicator (6 mg.) in 2 ccm. ventricular fluid is injected into the ventricle. (a) The time of appearance in the urine is ascertained, and (b) a quantitative determination of the excreted amount is made two hours after its appearance in the urine. (2) The absorption from the subarachnoid space. A lumbar puncture is made and the same quantity of indicator in spinal fluid is injected. The time of appearance and the quantitative excretion in the urine are estimated. (3) Whether the communication between the ventricles and subarachnoid space is open or closed. After ventricular puncture and injection of the above-mentioned quantity of indicator a lumbar puncture is made, and the presence of the substance in the spinal fluid is determined. The procedure may be reversed and the fluid from the ventricles tested. During these observations the patients were kept in the dorsal position. The urine for examination was obtained by catheterization.

Investigations in regard to the communication between the ventricles and the subarachnoid space and the absorption from them in cases without

hydrocephalus were carried out on six cases. In three cases no evidence was present that the central nervous system was at all affected. (The cases were all infants.) Three cases of tuberculosis with tuberculous meningitis were tested and observations made during the course of the meningitis. In meningitis there is always the possibility of decreased absorption being present. The results, however, are analogous to those without meningitis. In three cases autopsies were performed. There was no hydrocephalus and in none of the cases was there an occlusion of the foramina of Magendie and Luschka. The results of this group are identical with those obtained in animals. In each case the presence of a communication between the ventricles and subarachnoid space was proven, and in two cases the relative amount of fluid which passed from the subarachnoid space to the ventricle could be determined quantitatively.

Clinical investigations regarding the absorption of fluid from the ventricles and from the subarachnoid space in patients with hydrocephalus internus were likewise carried out employing phenolsulphonophthalein. By using the above-described methods it was possible to divide the cases of hydrocephalus internus into two classes. The introduction of the substance into the ventricles and the later examination of the spinal fluid for its presence determines whether the communication between the ventricles and the subarachnoid space is closed (Group 1) or open (Group 2). The further differentiation between these two groups will be taken up later.

Group 1. Hydrocephalus internus with closure of the communicating canals of the ventricles. The authors investigated clinically 7 cases of hydrocephalus internus, performing the same experiments on these as on the animals. The important point in this group is the absence of a communication between the ventricles and the subarachnoid space. This absence was proved in all 7 cases by the use of phenolsulphonophthalein. In 5 cases the clinical observation was corroborated by a later post-mortem examination. In one case a thick tuberculous exudate covered the base of the brain and sealed the communicating foramina hermetically. In two cases the foramina were closed by adhesions of an old meningitis process. In two cases the aqueduct of Sylvius was completely closed. In both cases the region of the aqueduct was invaded with neuroglial tissue. The two remaining cases are still alive. In all 7 cases the absorption of fluid from the ventricles was almost nil, as it was only 2 per cent 2 hours after the injection. It will be seen that the average absorption of the ventricle is about one per cent an hour. This absorption is independent of the size of the ventricle or of the quantity of fluid present. The time of absorption likewise is much prolonged from the normal period of a few hours to about 10 days. Hence, it may be stated that for practical purposes there is no absorption of cerebrospinal fluid from

the ventricles of the brain. The appearance of the substance in the urine is also long delayed (30 to 50 min.). In contrast to the delayed ventricle absorption is the high absorption from the subarachnoid space in all cases except the two with post-meningitis changes. Here the time of appearance in the urine as well as the time of total excretion after injection into the subarachnoid space is normal. The influence of meningitis upon the subarachnoid absorption will be discussed later. This type of hydrocephalus internus is caused by the failure of the cerebrospinal fluid to pass from its place of formation in the ventricles to the place of absorption in the subarachnoid space, as the communicating canals are closed.

Group 2. Hydrocephalus internus with free communication between the ventricles and the subarachnoid space. Four clinical cases were tested experimentally. In this type of hydrocephalus the communication between the ventricles and the subarachnoid space is open. After injection of phenolsulphonophthalein into the ventricle the indicator appears almost immediately in the spinal fluid, just as in normal cases. The presence of the communication is also proved by the rapid appearance of the indicator in the ventricles after injection into the subarachnoid space. That the opening is sufficient is shown by the relatively high concentration of the indicator in the spinal fluid after injection into the ventricle and vice versa. The absorption from the subarachnoid space was markedly decreased in each one of these cases (10 per cent in 2 hours, or approximately one-fourth of the normal amount). The time from the appearance in the urine to complete excretion was also much prolonged. This decreased absorption from the subarachnoid space is the etiologic factor of the hydrocephalus internus. The absorption from the ventricles likewise was very low (4 per cent) but higher than in Group 1. As has been shown, practically no absorption takes place from the ventricles, the decrease of the fluid after injection into the ventricles in cases of hydrocephalus internus of the communicating type being due to the absorption of the fluid from the subarachnoid space after the injected material has diffused there through the communicating canals. The fact that a hydrocephalus internus is formed and not an externus is due to the fact that the distended subarachnoid space backs up the fluid into the ventricles and distention results here also. As opportunities for performing autopsies on these cases were not afforded, the exact cause for decreased absorption from the subarachnoid space was not determined. It is probable, however, that the decreased absorption was due to adhesions which decreased the volume of the subarachnoid space.

The clinical differences between the communicating and the obstructive type of hydrocephalus internus. As far as could be determined there is no certain method of differentiating these two types except by determining the presence or absence of the

communicating canal. Although the increase in the size of the head appears to be a little slower in the communicating type, there are nevertheless cases in which the growth is very rapid. Occasionally it is possible to determine that the fluid comes from a case of the communicating type by the large quantity of fluid which can be obtained at spinal puncture. This, however, is only possible when the hydrocephalus is far advanced. The only satisfactory and reliable method is the phenolsulphonophthalein test.

Relation of the occlusion to hydrocephalus internus. In this series of 7 cases in which the presence of an occlusion was determined by means of the phenolsulphonophthalein test the authors were able to prove an obstruction in each of the 5 cases which came to autopsy. Furthermore, an obstruction introduced into the aqueduct of Sylvius regularly induced the formation of a hydrocephalus internus. The hydrocephalus is caused by the fact that the fluid is formed in the ventricles but is not absorbed there. In this respect there is a close analogy between the ventricles and the renal pelvis. Just as a hydronephrosis results from occlusion of the ureter, so a hydrocephalus results from occlusion of the exit canals of the ventricles. Neither in the renal pelvis nor in the ventricles of the brain is there sufficient absorption to overcome the effects of an occlusion.

Relation of meningitis to hydrocephalus internus. In two cases of Group 1 the pathological investigation proved that a preceding meningitis was the cause of the hydrocephalus, the opening having been closed. In Group 2 there were two more cases in which the hydrocephalus followed shortly after the attack of meningitis. How hydrocephalus can occur with the communicating foramina open has not been proved. The authors are unable to give the correct pathology underlying these cases, as all four patients are still alive, but that the pathological anatomy is analogous to the above-mentioned manner of formation is probably certain.

The relation of venous stasis to hydrocephalus internus. Venous stasis by occlusion of the large or small vein of Galen is undoubtedly the cause of a small percentage of cases of hydrocephalus internus. The experimental proof was mentioned earlier in the article. Cases due to thrombosis of these veins likewise were mentioned. Although perhaps very rare, yet it is always necessary to think of them during autopsy. Their diagnosis is clinically impossible. In cases of tumor in the region of the mid-brain it is also likely that with compression of the veins the aqueduct of Sylvius was also compressed. As tumors are rare in childhood it is very unlikely that hydrocephalus is caused by venous stasis except in very rare instances.

The possibility of other causes for the formation of hydrocephalus internus. From the above-mentioned experiments and clinical cases it is very unlikely that alcohol, rickets, trauma, tuberculosis,

syphilis, heredity, etc., can cause hydrocephalus unless local changes have resulted at the base of the brain as a result of the disease. Its association with spina bifida has been commented on frequently. In these cases developmental anomalies locally probably constitute the cause. The brain atrophy and non-union of the cranial sutures are undoubtedly secondary phenomena, resulting from the increased intracranial tension.

Hydrocephalus internus after removal of a meningocele has been reported quite frequently but has never been satisfactorily explained. Muscatello, who reported a series of these cases, attributes them to an infection which occurred at the operation. The authors believe that it is due to the decreased volume of the subarachnoid space after removal of the meningocele, not leaving sufficient absorbing area. Before a removal of a meningocele is undertaken it would seem urgently necessary to make a quantitative determination of the absorption from the subarachnoid space to determine whether it is sufficient or not. If decreased, the operation would probably be contra-indicated in the light of our present knowledge.

TREATMENT OF HYDROCEPHALUS INTERNUS

The authors have shown that there are two types of hydrocephalus internus different from each other in regard to the underlying etiological factor; hence the treatment must be entirely different. It is, therefore, all important to determine whether the hydrocephalus is of the communicating or of the obstructive type. This can be easily ascertained by the phenolsulphonophthalein test. If the hydrocephalus is of the obstructive type, the logical treatment of course would be the removal of the obstruction. If this is situated at the foramina of Magendie or Luschka, as in two of the cases in Group 1, its removal ought to be possible. If, however, it is at the aqueduct of Sylvius, it is much more difficult to construct a new communicating canal. Before the removal of the obstruction is undertaken, however, it is necessary to test the absorptive power of the subarachnoid space. If this absorption is deficient, the operation would only convert a hydrocephalus of the obstructive type to one of the communicating type.

As the communicating type is due to decreased absorption from the subarachnoid space, the treatment must be devoted to increasing the absorptive surface of the latter. At present our knowledge of the cause of the decreased absorption is still very imperfect, but in two cases the autopsy findings pointed to the fact that adhesions due to an old inflammatory process had in part obliterated the space. The rational treatment would be to drain this fluid into other tissues having a sufficient absorptive power. It is plausible that the extirpation of the choroid plexes would decrease the production of the cerebrospinal fluid sufficiently so that the subarachnoid space could take care of the remainder.

CONCLUSIONS

Hydrocephalus internus can be produced experimentally by introducing an obstruction into the aqueduct of Sylvius. Hydrocephalus can be produced by introducing an obstruction into the aqueduct of Sylvius in spite of previous extirpation of the choroid plexes of both ventricles. The latter procedure, however, affects the degree of the hydrocephalus internus.

From these experiments it is evident that the cerebrospinal fluid is formed within the ventricles much faster than it can be absorbed from the ventricles and that the aqueduct of Sylvius is absolutely necessary for its outflow.

Hydrocephalus internus can also be produced by ligation of the vena magna Galeni near its origin; if the ligature is placed farther distally or the sinus rectus alone is ligated, hydrocephalus is not produced on account of the efficient collateral circulation.

The cerebrospinal fluid is produced principally by the choroid plexes and probably by filtration as well as by secretion.

That the quantity of cerebrospinal fluid is increased by a general venous congestion is proved by a temporary compression of the jugular vein, and this increase ceases as soon as the congestion is taken care of by the collateral circulation. Drugs affect only in a very slight degree the rapidity with which the fluid is formed. Pilocarpine causes a slight increase. The structures producing the fluid are quite impermeable. Only a very few of the substances introduced into the blood enter the cerebrospinal fluid and then only in traces. The fluid is protected much more effectively against substances in the blood stream than are the pleural, peritonitis, or pericardial fluids.

A rapid and constant formation and absorption of cerebrospinal fluid is taking place continually. The entire quantity is practically renewed every 8 to 21 hours. The lymphatic system plays a minor rôle in the absorption of the spinal fluid.

The fluid is absorbed directly into the blood. The entire subarachnoid space serves as the medium of absorption. We are dealing with a diffuse process and not with stomata leading into the venous sinuses or pacchionian bodies as absorbing structures.

In the ventricles practically no absorption takes place. The maintaining of a balance between formation and absorption renders a communication between the ventricles and the subarachnoid space absolutely necessary. After introducing phenol-sulphonaphthalein into the subarachnoid space it appears in the lateral ventricles in a very short time; hence there are no valves at these openings. The communication is established by means of the foramina of Magendie and Luschka through the fourth ventricle.

If a closure of the aqueduct of Sylvius is effected, the indicator does not reach the spinal fluid after injection into the ventricles; hence there are no foramina of Bichat and of Mierzejewski.

Particles introduced into the subarachnoid space without pressure are soon distributed evenly over the entire cerebral and spinal subarachnoid space. There are no currents leading to the venous sinuses. The particles are not distributed along the cranial and spinal nerves except along the four having prolongations of the subarachnoid membrane.

Hydrocephalus internus is divided into two distinct classes, depending on whether the communication between the ventricles and the subarachnoid space is open or closed.

In seven patients with hydrocephalus internus the absence of a communication was demonstrated. In each of these cases there was practically no absorption from the ventricles, whereas the absorption from the subarachnoid space was normal. As the outflow of the fluid was prevented from the ventricles hydrocephalus resulted. Four cases of hydrocephalus internus were examined in which a communication between the ventricles and the subarachnoid space did exist. In these cases, however, the absorption from the subarachnoid space was deficient.

Meningitis was the cause of the disease in two cases of each of the two types of the disease. The onset of hydrocephalus after operative removal of a meningocele is probably caused by the decrease of the absorptive area.

The surgical treatment of these cases must be instituted according to the variety of hydrocephalus.

In the obstructive type the obstruction should be removed if possible. In the communicating type a larger absorptive area should be provided for the fluid.

L. A. JUHNKE.

Davis, E. D.: A Case of Sarcoma of the Pituitary Body Treated by the Killian-Hirsch Operation.
Proc. Roy. Soc. Med., 1915, viii, *Laryngol. Sect.*, 57.

The patient complained of right frontal and temporal headache, at first spasmodic and then continuous, of two years' duration.

Examination on June 17 revealed central optic atrophy and posterior synechia. Acromegaly was diagnosed by the patient's large hands, feet, lips, and jaw, and by his general appearance. The pulse was 80; temperature 97 to 98.4°. X-rays showed a large sella turcica. Skeletal changes with ununited epiphyses were marked. The Killian-Hirsch operation gave no relief, so pieces of glandular pituitary with proliferating cells were removed.

On August 5 a large parietofrontal osteoplastic flap was raised and the roof of the right orbit was removed. The brain was elevated and easy and clear access was obtained to a cherry-like growth projecting between the two optic nerves. Severe hæmorrhage occurred when an attempt was made to remove the tumor. The patient died the same day the operation was performed.

Post-mortem examination showed that a piece of the large cystic growth projected into the sphenoidal sinus through the opening made at the first operation.

OTTO M. ROTT.

Davis, E. D.: A Post-Mortem Specimen of a Pituitary Cyst Opened by the Killian-Hirsch Operation. *Proc. Roy. Soc. Med.*, 1915, viii, *Laryngol. Sect.*, 57.

The patient complained of progressive blindness, and examination revealed optic atrophy and signs of hypopituitarism. Röntgenography revealed a large sella turcica with absorption of the dorsum sellæ.

July 26. The Killian-Hirsch operation was performed, but hæmorrhage on incision of the dura was profuse.

July 27. Hemiplegia developed, with loss of speech, paralysis of the right face, right arm, and leg.

July 30. Sight was notably improved.

August 12. Severe occipital headache and restlessness; temperature 103°.

August 14. Temperature normal.

August 23. Another attack of pain, restlessness, and high temperature.

September 11. Patient died with symptoms of meningitis, but paralysis of the leg had practically disappeared.

Post-mortem. A cherry-red cyst was found projecting between the optic nerves into the anterior fossa of the skull with the tail end of the cyst lying immediately over the opening made by the operation on the floor of the sella turcica. There was considerable absorption of the dorsum sellæ and basal meningitis.

OTTO M. ROTT.

NECK

Porter, M. F.: Diseases of the Thyroid Gland with Special Reference to the Surgical Aspect. *Internat. J. Surg.*, 1915, xxviii, 82.

Porter believes that all permanent goiters should be regarded as potentially toxic, and treatment should be instituted before serious cardiovascular changes occur. He has seen very few cases of infections and neoplasms of the thyroid, and suggests that sudden increase in the size of a simple goiter should arouse a strong suspicion of malignancy. He confines his remarks on treatment chiefly to hyperthyroidism; however, he emphasizes that all so-called simple goiters that are persistent should be looked upon as dangerous and should be removed, because thyrotoxicosis is much more likely to be engrafted upon a simple goiter than cancer upon a wart, a mole, or a lacerated cervix.

He strongly recommends the injection of boiling water into the gland as a substitute for the so-called medical treatment in patients with small thyroids and moderate symptoms of hyperthyroidism, also in cases with moderate or severe symptoms and relatively small glands and especially in cases of hyperplasia of a remaining lobe following lobectomy. It is also useful in substernal hyperactive goiters, in which case the removal might be hazardous. Patients with large goiters and extreme cases of hyperthyroidism should be treated with the injections until they become safe surgical risks and then

the gland should be removed. He does not recommend this treatment in non-toxic goiters.

HENRY J. VAN DEN BERG.

Ginsburg, N.: Surgical Anatomy of Thyroid Gland. *Ann. Surg.*, Phila., 1915, lxi, 268.

Severe hæmorrhages not infrequently attend partial thyroidectomy owing to (1) retraction of the vessels after incision; (2) distortion of the gland by overgrowth and consequent disturbance of landmarks; (3) the frequency of anomalous distribution of the thyroid vessels, particularly the veins.

The division of the superior thyroid artery often takes place at a distance of from two to three centimeters from the gland; hence, the dorsal branch might easily be missed in polar ligation, explaining why failure to improve is encountered in toxic goiter after complete single or bilateral ligation of the superior thyroids was thought to have been accomplished.

The middle thyroid vein is fairly constant, short, and likely to be overlooked in lobectomy, especially since traction will cause it to collapse to a thin cord, which bleeds freely if incised, when release of traction takes place.

Occasionally the inferior thyroid artery is wanting on one side and a huge superior thyroid artery compensates its absence.

Ligation of the inferior thyroid artery before division requires retraction of the carotid sheath and cannot be easily accomplished through a small incision. Ligation of the main branches before they enter the gland is made dangerous by the proximity of the motor laryngeal nerve. The peripheral ligation of the vessels in the gland substance, with retraction of the lobe toward the median line, spares both the nerve and the parathyroids, and is therefore much safer; this is the procedure advised by Kocher, Halsted, and Mayo.

The quadruple ligation of the thyroid vessels with nerves included in the ligature, as advocated by Rogers, is fundamentally based upon a certainty of accomplishing a reduction of the glandular arterial burden, and no other operation upon the thyroid save total excision equals it in this respect. The thirty-seven cases reported by Rogers offers incontestible proof of the value of this procedure.

LUCIAN H. LANDRY.

Fisher, M. K.: The X-Ray Treatment of Exophthalmic Goiter. *N. Y. M. J.*, 1915, ci, 455.

The author reports a series of 23 cases of exophthalmic goiter treated with röntgen rays. Of this number 4 were operated upon previous to radiation and 1 death resulted from accident. Of the remaining 15 cases treated by X-ray alone 6, or 40 per cent, were cured; 5, or 33⅓ per cent, were improved; and the other 4, or 26⅔ per cent, were unimproved. The cases reported as cured have been well for two years; those improved have occasional attacks of hyperthyroidism and return for further treatment.

The author advances the theory that the X-ray does good in these cases by causing a retroversion from the exophthalmic type to the cystic or simple hypertrophic goiter, but does not mention any instances of cystic thyroid following röntgenization of an exophthalmic goiter.

The symptoms respond to treatment in the following order: subsidence of exophthalmos, then of nervousness, dyspnoea, and sweating, followed by improvement in the tachycardia and arrhythmia. The thyroid may or may not return to its normal size. The author employs small and frequently repeated treatments rather than massive doses in the treatment of exophthalmic goiter. G. W. GRIER.

Haberer, H. von: Failures in the Treatment of Basedow's Disease (Kasuistisches zur Frage therapeutischer Misserfolge bei Morbus Basedowii). *Wien. klin. Wchnschr.*, 1915, xxviii, 1, 57.

Von Haberer has heretofore discussed his experience in treating Basedow's disease and goiter by removal of the thyroid and part of the thymus. He had excellent results in 23 cases and from his experience he is convinced that the thymus has a

toxic action on the heart, and that in all cases of Basedow's disease it should be reduced because it is impossible to distinguish the cases due to the thymus from those due to the thyroid.

He now reports a case in which the thyroid and a large section of the thymus were removed. In about 12 hours symptoms developed similar to those usually caused by persistent thymus, and the patient died. This suggested the possibility that his theory was wrong, but post-mortem examination showed that in spite of the large section removed 70 gr. of thymus tissue still remained, confirming more strongly his opinion as to the effect of the thymus.

He describes another case in which the thyroid was successfully removed and the thymus retained. The case had been treated unsuccessfully with röntgen rays, 10 treatments having been given. Not only was there no favorable effect on either the thymus or the thyroid, but severe inflammatory changes had been induced. He concludes that preliminary röntgen treatment in Basedow's disease is not justified and that the treatment of choice in all cases is operative removal of the thyroid and reduction of the thymus. A. Goss.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Davies, H. M.: The Operation of Rib Mobilization in the Treatment of Phthisis. *Brit. J. Surg.*, 1915, ii, 544.

The author describes the procedure of rib mobilization in phthisis when nitrogen pneumothorax is impossible, owing to adhesions. He lays particular stress on free rib resection and the diminishing of operative shock and post-operative pain.

Wilms first conceived the idea of this procedure. He advocated the removal of 3 or 4 cm. of the posterior part of the first eight ribs and a similar removal of the costal cartilages of the first five ribs. The chest wall then sinks inward, downward, and tilts downward. The operation is done in two stages.

The author, however, obtains better results in collapsing the chest by resecting the entire cartilages of the diseased side at the second stage. The first rib especially must be mobilized.

In the prevention of shock the idea of anoci-association is used. Absolute alcohol is injected into the costal nerves because (1) a minimum amount of chloroform can be used, (2) the pain of the cut ends of the ribs irritating the surrounding tissues is abolished, and (3) the paralysis of the costal muscles allows greater collapse of the chest wall. A few minims only are used in each nerve, as larger amounts cause sloughing.

The patient should be kept in bed for an entire week before operation. Chloroform is the anæsthetic of choice and is preceded by an injection of morphine gr. $\frac{1}{4}$ and atropine gr. $\frac{1}{100}$.

1. In the first stage the patient lies on the sound side with the field of operation slightly raised, thus giving more room posterior to the scapula. The incision is made at the outer border of the erector muscles from one inch above the first rib to one inch below the last rib. The nerves are next anæsthetized, the point of the needle piercing the external intercostal a little above the center of the space. The periosteum is then stripped up, and 6 cm. of each rib removed. The author uses a special periosteal elevator and bone forceps. The latter have rounded ends with the cutting edges extending to within one-eighth of an inch of the points. Great care should be taken to protect the eighth cervical and the first dorsal nerves, the lowest trunk of the brachial plexus, and the subclavian artery.

2. In the second stage, with the patient flat on his back, the incision is made three-fourths of an inch from the lateral sternal border, beginning above the clavicle and ending below the costal margin. All the costal cartilages are resected after stripping up the perichondrium, care being taken to protect the subclavian and innominate veins and the internal mammary artery and vein. By removing the second cartilage first the first rib is more easily accessible. Also enough cartilage should be removed so that at the time of maximum approximation of the ribs to the sternum, the cut edges are still separated by about one-third of an inch.

It is necessary to maintain only light anæsthesia at this time in order to preserve the coughing reflex and thus clear the bronchi of any secretion that may be forced into them as the chest wall collapses.

The main danger lies in the subsequent reactions with a dissemination of tubercle bacilli. The patient must be kept quiet in bed until the temperature is settled after the second operation, the dressings are not to be changed until the stitches are removed, as a rise of temperature will follow, and no tuberculin is to be injected.

The interval between the two stages should be from a fortnight to a month or six weeks. The second stage should not be attempted before the reaction to the first has totally subsided. It is wiser to wait too long than too short a time.

The prognosis is considerably influenced by the amount of involvement of the bronchi, because the amount of compression being greatest in the parenchyma and least at the root of the lung, complete obliteration of the rigid and dilated bronchi is not obtained.

After the second stage there is an immediate diminution of cough and expectoration, and after the post-operative reaction a marked general improvement, sometimes taking six months before the maximum is reached. After the initial improvement the rate of subsequent advance depends on the condition prior to operation. PHILLIPS M. CHASE.

Lilienthal, H.: Exploration of the Thorax with Primary Mobilization of the Lung. *Tr. Am. Surg. Ass.*, Rochester, Minn., 1915, June.

The author dwells upon the importance of visual exploration of the thorax in order to determine the local conditions which might prevent a cure by the methods heretofore employed, such as sacculations, adhesions, and confining pleural exudates. He advises a long incision in the seventh or eighth interspace with wide separation of the ribs by means of a rib-spreading retractor.

He warns against the danger of hæmorrhage on separating the adherent lung from the chest wall and believes that full mobilization of the lung can be secured by stripping away the confining pleural exudate and making lateral incisions in this membrane. The operation is outlined on general surgical principles to replace the old method of working in the dark.

He believes that thoracoplasty will become a rare operation if his method of primary mobilization is adopted. In the critical cases he precedes the operation itself by drainage for a few days through a short intercostal incision in local anaesthesia. He reports 23 cases with 17 per cent mortality. A further report will be made when a large number of patients have been treated by this method.

TRACHEA AND LUNGS

Haim, E.: Gangrene of the Lung After Injury by a Bullet (Über Gangrän der Lunge nach Schussverletzung derselben). *Wien. klin. Wchnschr.*, 1915, xxviii, 232.

The general view existing in regard to lung injuries by bullets is erroneous. Although many cases

of injury by the modern bullet recover spontaneously, there are nevertheless many who die shortly after injury and others who develop serious complications. Upon the proximity of the observer to the front lines depends to some extent whether he sees the severe injuries or not. There are many wounded who die on the battlefield from lung injuries, and the hospitals nearest the front take care of the severe but not fatally injured.

The author observed three cases of gangrene of the lung develop after a pulmonary injury by a bullet, although no other surgeon writing on pulmonary injuries has reported a single case. Pulmonary gangrene may develop if a rib is fractured and pieces of bone are forced into the lung tissue, the infection occurring either from the infected point of entrance or from putrefactive organisms carried into the damaged lung from the outside. The treatment consists in early resection when recovery is not only possible but highly probable. It is therefore not correct to consider pleural empyema as the only indication for surgical intervention in injuries of the lung. In discussing the etiology of pulmonary gangrene, bullet wounds of the lung must be considered as etiological factors.

L. A. JUHNKE.

Carl, W.: Immobilization and Shrinkage of the Lung by Means of One-Sided Phrenic Nerve Resection and Its Influence upon Experimental Pulmonary Tuberculosis (Die Immobilisierung und Schrumpfung der Lunge durch einseitige Phrenicusresektion und deren Einfluss auf die experimentelle Lungentuberkulose). *Beitr. z. klin. Chir.*, 1914, xciii, 348.

The author endeavored to determine (1) what influence the resection of the phrenic nerve on one side would exert upon respiration; (2) what changes would occur in the bony thorax and in the thoracic organs, especially in the lungs; and (3) what the influence of such resections would be upon the development of experimentally induced pulmonary tuberculosis.

He conducted over one hundred animal experiments, all of which are reported in detail and illustrated by photographs and radiographs. He concludes that with the exclusion of the diaphragm a shrinkage of the bony thorax results. The ribs are drawn closer to the spine and at autopsy a flattening of the bony thorax was found in some cases. The diaphragm, as is only to be expected after the severing of its motor nerve supply, is atrophic, the degree depending on the duration. By viewing the diaphragm from the abdominal side a drawing toward the healthy side frequently was observed.

The decrease in the volume of the thoracic cavity, which from a practical point of view is the most interesting, was only exceptionally of a high grade. It is of higher grade if the animal is young—the younger animal's softer bones being more pliable.

The contraction of the lung itself is not uniform in all cases. The author saw a few cases of extremely high-grade contractions, the contractions

affecting not only the lower lobe, but also the upper. In the infected animals the author always observed less development of the tuberculous process if the contraction of the lung was at all marked. The individual tubercles were smaller and scarcer on the side on which the lung had been put to rest. The observation was all the more noticeable if the tuberculous process was a chronic one.

According to these experiments, phrenicotomy may be considered a relatively harmless procedure, which may be performed under local anæsthesia. A complete immobilization, of course, is not obtained. To obtain that, the other respiratory nerves would also have to be cut—the branches of the cervical plexus and the intercostal nerves. Of course even then the amount of contraction of the thoracic cavity and lung depends upon the rigidity of the bones. To overcome the effect of the severing of the phrenic nerve permanently on the human, the author picked up the nerve at the scalenus muscle and crushed it with a hæmostat, thus permitting a later regeneration.

L. A. JUHNKE.

PHARYNX AND ŒSOPHAGUS

Davis, B. F.: Hæmorrhagic Erosions of the Œsophagus. *Ann. Surg., Phila., 1915, lxi, 261.*

The author covers the possible causes of hæmorrhagic erosions of the œsophagus—an extremely rare condition, of which only four cases can be found reported in the literature—and cites a case operated upon by Wyllys Andrews.

According to Kaufmann, hæmorrhagic erosions in the œsophagus may arise from the same agencies that are responsible for their production in the gastric mucosa. They may follow as the result of severe infectious diseases; of the hæmorrhagic

diathesis; of the action of endogenous poisons, as in uræmia and cholæmia; or of exogenous poisons, as phosphorus, arsenic, mercuric chloride, acids, and alkalies. They may be embolic, as in endocarditis, pneumococæmia, or streptococcic sore throat.

Post-operative gastric and intestinal hæmorrhages, particularly in those cases in which omental vessels have been ligated, are due to direct and retrograde thrombosis in the arteries as well as in the veins. Excessive vomiting may cause gastric hæmorrhages through marked venous hyperæmia. Shultz reports two fatal cases of œsophageal hæmorrhages due to this cause.

Gastric distention may produce complete obstruction of the gastric circulation. Similarly, intestinal distention may lead to anæmia of the bowel wall with stasis and thrombosis of the mesenteric vessels, leading to necrosis of the mucosa with the formation of "dilatation ulcers." In the case reported, the phenomenon is accounted for as follows: Marked increase of intra-intestinal pressure caused collapse and occlusion of the thin-walled vessels of the intestinal wall, with resulting stasis in the mesenteric vessels, causing thrombosis. The circulation of the entire small intestine being practically cut off, the circulation through the portal vein became much reduced in volume and caused stagnation in the gastro-œsophageal venous anastomosis.

At the operation the distention of the bowel was suddenly relieved; there was a sudden influx of blood into the portal system with almost explosive hæmorrhagic infarction of the more extensively thrombosed areas in the intestines, with occasional rupture of the mucosa and escape of blood in the bowel lumen and gradual infiltration of the thrombosed area of the œsophagus. LUCIAN H. LANDRY.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Woolsey, W. C.: The Lymphatic Drainage of the Peritoneal Sac. *Ann. Surg., Phila., 1915, lxi, 291.*

By injecting India ink and fine lampblack into the pelvic peritoneum, the author demonstrated that these dyes can be recovered in a short space of time in the superior retrosternal lymph-nodes and in some instances even in the bronchial lymph-nodes.

The questions that arise in a consideration of this subject are:

1. The physical integrity of the mesothelium covering the abdominal aspect of the diaphragm, as to the presence or absence of openings of sufficient size to be called stomata (von Recklinghausen, 1865).

2. The exact manner and path of absorption from the peritoneal cavity of injected foreign agents.

3. The existence of a direct lymphatic absorption as opposed to or in conjunction with a hæmatogenous absorption.

4. The activity of the diaphragmatic lymphatics in assuming the major rôle in such absorption.

Regarding the first question, the author confirms the report of MacCallum; no evidence of stomata could be found. From various experiments he verified the findings of Muscatello, Buston and Torrey, Wells and Johnstone, and others, and comes to the following conclusions:

1. Absorption of certain solid foreign material injected into the peritoneal sac occurs with marked rapidity, first by a process of translocation through the cells of the diaphragmatic mesothelium and later through the agency of leucocytes.

2. That such solid foreign material having passed the peritoneal mesothelium is conveyed through the endomysial tracts throughout the diaphragmatic musculature to the lymphatic radicals on the pleural surface of the diaphragm, from these through the various diaphragmatic gland groups to the costoxiphoid glands of Sappey, and from thence to

the retrosternal chain of lymphoid tissue to the subclavian vein or thoracic duct.

3. That certain fluids injected into the peritoneal sac follow the same lymphatic absorption lines, whether they coincidentally enter the blood stream directly or not.

4. That the tissues of the diaphragm take a distinctly active part in absorption from the peritoneal sac and that other areas of parietal peritoneum functionate little if any in the lymphatic absorptive process.

5. That the post-operative postural treatment of pelvic peritonitis as advocated by Fowler has definite pathological foundation.

LUCIAN H. LANDRY.

Sweet, J. E., Chaney, R. H., and Willson, H. L.: **The Prevention of Post-Operative Adhesions in the Peritoneal Cavity.** *Ann. Surg.*, Phila., 1915, lxi, 297.

The authors have published the results obtained in a series of experiments carried out on dogs in an effort to prove or disprove the value of different agents suggested to prevent or limit post-operative intestinal adhesions. The same type of operation was performed in all the experiments, attention being given to rigid asepsis and special care as to "gentle" technique.

The first work — used as a control — was simple end-to-end intestinal anastomosis performed on two dogs; the animals were killed in six and eight weeks, respectively; at autopsy the abdomen was free of adhesions, gut normal, and no signs of peritonitis present.

The next experiment consisted of noting the effect of covering the operated area with an attached portion of omentum. This gave the same result, except for adhesions where the omentum was purposely fixed. Two dogs were then treated by using free omental or mesenteric grafts. These at autopsy showed no adhesions.

Studies were then made to show the effect of liquid paraffin, sterile olive oil, and glymol in checking adhesions. The abdominal cavity was injected some ten minutes before operation with one of the above-mentioned oils. All sponging at the time of operation was done with gauze saturated with the sterile oil; in every case there was either peritonitis or adhesions to a variable degree with marked exudation. In three dogs 100 ccm. of oil were injected into the abdominal cavity and no operative work done. Autopsy showed a large amount of exudate and adhesions varying in intensity, but greater in the dogs that were allowed to live longer.

Seven further experiments were done by pouring 50 ccm. of a 3 per cent sodium-citrate solution into the abdominal cavity after performing the entero-enterostomy. This resulted in imperfect healing of the abdominal wall and intestine, but did not prevent visceral adhesions.

In 11 cases, where some type of oil was used,

adhesions were found in 9; in one case, where no adhesions were found, the animal died of peritonitis. More or less extensive exudation was present in all the cases. In 7 cases the phagocytic index was tested and found markedly reduced in all but one case; and even in this case it was not normal. Oil in any form causes an intense exudation of leucocytes, and these are inhibited from their normal physiological function by the presence of the oil. The only method of limiting adhesions, is to limit the wounds of the peritoneum. This can be done by careful technique and by covering the necessary wounds with freed or attached portions of omentum or mesentery.

LUCIAN H. LANDRY.

GASTRO-INTESTINAL TRACT

George, A. W., and Gerber, I.: **Observations from the Study of a Thousand Gastro-Intestinal Cases.** *Am. J. Röntgenol.*, 1915, ii, 592.

During the past two years George and Gerber have had the opportunity of studying about a thousand cases of gastro-intestinal disease with the bismuth method. Their technique is as follows: The patient comes to the laboratory after a very light breakfast of toast and coffee or tea, or the equivalent. Several plates are taken of the gall-bladder region. Then a meal is given of 100 grams of bismuth subcarbonate or barium sulphate in a mixture of 500 ccm. composed of two parts water and one of buttermilk; orange juice or coffee-extract can be added. A series of plates of the stomach and duodenum are then made in the prone, erect, and right lateral positions. Rarely the fluoroscope is used to settle certain problems, especially the question of adhesions. The patient returns again after six hours, in the meantime having taken a light lunch. One or two more plates are made, and fluoroscopy in the horizontal position plays a somewhat important rôle in studying the cæcum, appendix, and terminal ileum. A similar examination is made at the end of 24 hours. In many cases bismuth enema is given after two or three days.

The authors think that the presence of a six-hour residue in the stomach is the least important of any factor in diagnosis, contrary to the views of Carman. About the same situation exists with regard to various motor phenomena, hyper- and hypomotility, hyperperistalsis, antiperistalsis, hypertonus, etc. To attempt seriously to base a diagnosis upon these functional disturbances is useless. Simple peptic ulcer cannot be demonstrated directly, but many authorities doubt its existence. Chronic gastric ulcer where there is the least involvement of the musculature can be definitely detected by the direct method. Carcinoma of the fundus offers no great difficulties. Cancer at the pylorus is easy to recognize if advanced; if early, its detection means the most careful work with repeated plates, and by this method can be diagnosed long before there are definite clinical data. The chances with the

continental or indirect method are indeed hopeless. The problem of the röntgen diagnosis of duodenal ulcer is, the authors trust, settled by this time. The direct method is not quite 99.9 per cent pure, but far ahead of indirect methods. The one essential in the diagnosis of gall-stones is extreme care; the figures generally quoted are far too low; the problem is to learn to recognize their shadows. The lower right quadrant of the abdomen — the cæcum, ileum, and appendix — and the colon offer considerable positive evidence of disease by direct examination.

The authors believe that by their method they are warranted in making a definite positive or negative diagnosis in regard to the presence of organic disease of the gastro-intestinal tract, with the present possible exception of gall-stones. This statement does not apply to an examination which is based largely upon fluoroscopy, and where the latter is used chiefly to elicit signs of purely functional disturbances.

ALBERT MILLER.

Sherrill, J. G., and Graves, F. S.: Hæmangio-Endothelio-Blastoma of the Stomach. *Surg., Gynec. & Obst.*, 1915, xx, 443.

The authors make a brief report of a case of this very rare affection of the stomach occurring in a woman of thirty-one. Her symptoms had been present for about seven years, following a fall when she struck her epigastrium against the corner of a table. The usual symptoms of gastric ulcer were present and a palpable mass could be felt in the epigastrium. The growth consisted of a reniform mass growing from the greater curvature of the stomach near the pylorus. It was mottled purplish in color and had a rather broad attachment to the stomach, moving freely with that organ. A portion of the stomach about four inches in length along the convex border and two and one-half inches along the concave border was removed, together with the tumor and the upper portion of the duodenum including the pylorus; and a gastroduodenostomy was completed in the usual manner. The growth was smooth on its surface, somewhat firm near its attachment to the stomach, without induration, and soft in consistency along its distal portion.

Upon examining the growth after removal three small openings in the mucous membrane were noted, one of which extended entirely through the gastric wall and communicated directly with the inside of the growth. Through this opening the little finger could readily be passed. The center of the growth seemed to be broken down, but contained only delicate tissue and no appreciable fluid. It has not been the authors' experience to find a condition of this kind existing with gastric ulcer. The microscopic diagnosis was hæmangio-endothelio-blastoma.

Morgan, W. G.: Syphilis of the Stomach. *Am. J. M. Sc.*, 1915, cxlix, 392.

Morgan considers syphilis a sufficient factor etiologically to have a Wassermann test applied to

all of his patients who present pronounced symptoms of gastric disturbance, and he thinks one per cent of ulcers are due to syphilis.

The stomach may be affected in syphilis either functionally or organically. Functional disturbances are common in the secondary and tertiary stages as general systemic disorders. Organic syphilis occurs in the third stage and is usually a more or less circumscribed gummatous deposit or an infiltration of the gastric wall. Later the gumma may break down, resulting in an ulcer, eventually forming a cicatrix and a contracture. There are no characteristic symptoms of syphilis of the stomach that differ from those of similar affections of the stomach. The distinctive diagnostic criterion is a positive Wassermann reaction or the result of antisyphilitic treatment.

He reports eight cases in detail and points out some characteristics that were common to all. He found the peptic power of the stomach was lost. The benzidin reaction was positive at one time or another. There was pain in the stomach, which was not influenced by the character of the food. This pain was always worse at night.

There was stagnation of the gastric contents, food remaining in the viscus for hours, although there was no organic obstruction of the pylorus. There was considerable gastric dilatation. The duration of the symptoms was somewhat longer and the physical deterioration was less than in carcinoma. The appetite was generally good; vomiting occurred in all cases at some time.

The recti muscles showed a constant tendency to go into spasm, and for this reason a tumor mass would not be as easily recognized as it would be in carcinoma of the stomach. D. L. DESPARD.

Smithies, F.: Diagnosis and Prognosis in Gastric Ulcer; a Clinical Study of 500 Consecutive Operatively Demonstrated Cases. *Ohio St. M. J.*, 1915, xi, 82.

The material comprising the author's report was obtained from his records at the Mayo Clinic and at the Augustana Hospital. It includes the summary of 500 operatively demonstrated gastric ulcers. Instances of *ulcus carcinomatosum* are not included in the study. Duodenal with relation to gastric ulcers occurred in the ratio of 2.45 to 1. The age of greatest incidence was between 40 and 50 years. There were 315 males and 185 females, approximately three males to each female; 30.4 per cent of the patients were American-born farmers. The ulcer was most frequently noticed after an acute infectious disease, and in instances where the symptoms had already appeared they were aggravated by the patient's condition. In 50 per cent of the cases there was proven to be existent an inflammatory condition in the abdomen, such as cholecystitis or appendicitis. In relating the clinical symptomatology the author lays special emphasis on the periodicity of the attacks—69.2 per cent of the cases showed this condition. The

records show that 52 per cent of the cases had been dyspeptic for 5 to 20 years before operation. Loss of weight was not infrequently noted during these spells, but there was a rapid gain when the abdominal distress subsided. Without gross hæmorrhage anæmia not infrequently goes hand in hand with intermittent decrease in weight. The average hæmoglobin in the series was 76 per cent. The red cell count was above 4,000,000 and the white count in non-perforating ulcers was rarely higher than 11,000 cells. The patients complained particularly of epigastric pain, vomiting, hæmorrhage, weight loss, weakness, and anæmia. The signs included evidence of abdominal tenderness, alterations in the gastric secretions and emptying power of the stomach, and the usual findings in the stools.

Pain symptoms. Ninety-eight per cent of the cases complained of some form of gastric distress. In four out of five the pain was epigastric without a definite point of intensity. In about one-third of the cases there was no transmission of the pain, but in order of frequency it was noted to be transferred to the right scapular region, the right rib edge, the infranavel region, between the scapulae, to the sternum, throat, and nipples. Eighty-three per cent of the cases showed definite relief of the pain by food-taking; 80 per cent showed distress within four hours after eating; nearly 50 per cent had discomfort three hours after eating; 44 per cent of those having lesser curvature ulcers had pain one to three hours after food was taken; two-thirds of the ulcers located near the cardia had a maximum distress two hours after food-taking, and two out of five within one hour.

Distress in gastric ulcer cases is most commonly relieved by the limitation of the amount or alteration in the character of the food, the taking of food when distress is most marked, the neutralization of acid by alkalis or by emptying the stomach.

The observation of relief of gastric distress by food ingestion is of prime importance in the diagnosis of uncomplicated peptic ulcer. If the history is constantly obtained, it is practically pathognomonic in three out of five cases. The state of mind appears to exert a not altogether negligible influence in the production of uncomfortable gastric spasms.

Of the author's cases 74 per cent gave a history of vomiting, this depending largely on the character of the food intake. Vomiting from eight hours to several days after taking food was common in 22 per cent of the ulcers in the non-obstructing group, and in 68 per cent where ulcer scars caused some type of stenosis. Of the patients who vomited 44 per cent did so regularly; 52 per cent vomited occasionally, generally when attacks of abdominal distress occurred. In cases of pyloric stenosis, vomiting occurred in 78 per cent of the cases. "Water-brash" was noted in 82 per cent, or 410 cases; history of gross bleeding, either hæmatemesis or melæna, was obtained in 36.4 per cent of the cases. These symptoms when taken into consideration with other clinical facts are practically pathognomonic,

yet but one out of three cases showed them. Of those bleeding one out of four suffered no inconvenience; about one out of three had symptoms of fainting, and two out of five actually fainted. Approximately three out of every five cases of bleeding ulcers exhibit symptoms of some grade of perforation.

Signs in gastric ulcers. Of 465 cases 93 per cent showed abdominal tenderness, with the maximum point to the right of the midline. The operative statistics show that four out of five gastric ulcers were located at the pylorus or in the region distal to the pyloric half of the pars media. These facts are of value in locating the position of the ulcer from the point of greatest tenderness. In 336 cases 67 per cent showed some evidence of retained contents when the stomach was emptied at 12-hour intervals. From a personal examination of 8000 stomach extracts, there is born the conclusion that only the persistent demonstration of food retained in the stomach longer than 10 hours has definite significance to prove that the gastric lumen is not patent. The persistent finding of test-food remnants after a 12-hour interval is an indication for surgical intervention. In the retention cases the average free HCL was 56.4, the average total acidity 74.2, and the combined acids and acid salts 17.8. In non-retention gastric ulcers the free HCL averaged 40.5, total acidity 52.4, combined acidity 11.6. It was observed that the highest gastric acidities were uniformly determined in acute and subacute perforating ulcers. Smithies thinks it quite necessary to call attention to the fact that chronic gastric ulcers bleed only intermittently. Where the patient has been properly prepared for estimation of hæmoglobin in the stool, the finding of blood is of more significance with regard to the activity of the ulcer than as a diagnostic aid in determining that an ulcer is present. He is of the opinion that the X-ray evidence in gastric ulcers is more corroborative than absolutely necessary, and that the fluoroscopic examination is more important than the X-ray plates, because the stomach is seen actively working instead of at one specific phase in its mobility as shown in the plate. In fully 85 per cent of the cases the diagnosis had been well established before the X-ray findings were observed.

Prognosis of gastric ulcers. The clinical course is highly individual. There is undoubted histologic proof that many ulcers heal, yet there is no means of determining clinically in a given case whether an ulcer will heal in its acute stage, will tend to benign chronicity, or will become the basis of a future cancer. Many gastric erosions and simple ulcers have a tendency to heal. It is also a commonly observed fact that some ulcers will tend to chronicity and recurrence in spite of all known methods of therapy. Pyloric stenosis, with gastric dilatation, hour-glass contraction, perforation involving other viscera, or malignant degeneration may occur without regard to clinical care. Clinically each case is a law unto itself. The life history of ulcers seems to depend

on unknown factors. However, it is becoming more generally recognized that chronic gastric ulcers have a tendency to frequent recurrence, not uncommonly terminating in malignancy.

In closing the author advises that when there is doubt as to the actual pathology existing in a given case the patient should be urged to submit to a laparotomy, for it should be remembered that the cases of gastric cancer early diagnosed and surgically curable are those in which the clinical symptomatology is that which we associate with chronic gastric ulcer.

HARRY G. SLOAN.

Deaver, J. B.: Gastric Ulcer. *Am. J. M. Sc.*, 1915, cxlix, 325.

In discussing the cause of gastric and duodenal ulcer, Deaver states that he believes the appendix is responsible for liberating the infection that produces these conditions. He points out that as a rule ulcer is only productive of symptoms when it is in an inflamed or active state.

He thinks that medical treatment should be given a fair trial in the absence of severe complications.

He says the mortality records of those who combine gastro-enterostomy with closure of the ulcer are superior to the records of those who only close the ulcer.

He reviews the difficulties confronting one dealing with severe hæmorrhage as a complication. He believes it wise to wait only for the reaction from shock and for the refilling of the blood-vessels before operating.

After opening the abdomen and locating the ulcer the stomach is opened, and if the bleeding point is seen it is ligated. If, as is commonly the case, the vessel cannot be found, a stitch of catgut is whipped around the base as well as the edges of the ulcer, with the object of occluding the vessel. The stomach is closed and a gastro-enterostomy quickly performed.

Where the ulcer cannot be located by palpation and inspection he opens the stomach widely anteriorly by a longitudinal incision and inspects the interior of the stomach thoroughly.

Excision is influenced by the site, adhesion, and the general condition of the patient. Transduodenal excision was performed in one case in which the ulcer was situated on the internal posterior wall of the second part of the duodenum. Ulcers high up in the fundus are most difficult to treat; gastro-enterostomy fails to cure, and excision is usually impossible. These ulcers are best treated in an indirect manner by jejunostomy.

D. L. DESPARD.

Soresi, A. L.: Secondary Ulcers of the Stomach and Jejunum. *Ann. Surg.*, Phila., 1915, lxi, 328.

Soresi reports a case in which silk was used as the suture material in performing a gastro-enterostomy both for the seroserosus and the through-and-through sutures. The patient made a good

operative recovery but complained of constant pain in the mid-epigastric region.

Four and one-half months after the operation a secondary laparotomy was performed; the anastomosis was found to be in perfect condition and an opening was made in the anterior wall of the stomach permitting an inspection of the through-and-through suture line.

The silk suture was still in place, but there was a small ulcer of the mucosa of the stomach and also of the jejunum. The silk was removed, the stomach closed, and the patient made an uneventful recovery and has since been free from symptoms, twenty months after the operation.

From studying forty-seven gastro-enterostomies on dogs, the author feels that silk or linen thread is suitable for the seroserosus suture, but an absorbable suture, as catgut, iodized gut, or chromic gut should be used for the through-and-through suture.

D. L. DESPARD.

Ross, G. G.: Perforated Gastric and Duodenal Ulcer. *Am. J. M. Sc.*, 1915, cxlix, 476.

Ross reports a number of perforated gastric and duodenal ulcers. In most cases the diagnostic symptoms were typical, i.e., a history of previous digestive disturbance, often followed by a period of quiescence with a recurrence of the symptoms immediately before the perforation, characterized by severe upper abdominal pain, constant in character and accompanied by shock and a general board-like rigidity. At first the abdomen may be xiphoid, but later becomes distended. Nausea and vomiting are usually present, as well as obliteration of liver dullness. In one case blocking of the perforation had taken place soon after its occurrence and those symptoms dependent on the presence of peritonitis were not so marked.

He advises closing the perforation by a purse-string suture or by Lembert sutures; if the induration is too great for this, the site of the ulcer may be drained.

Gastro-enterostomy should not be performed except when the closure of the ulcer or the induration of the ulcerated area is great enough to interfere with the function of the intestine.

The abdominal wall is closed completely or with only a cigarette drain, while the pelvis is drained by means of a glass tube inserted through a stab wound in the lower abdomen.

D. L. DESPARD.

MacCarty, W. C.: Histogenesis of Cancer of the Stomach. *Am. J. M. Sc.*, 1915, cxlix, 469.

It is generally believed that gastric carcinoma arises from post-natal epithelial rests which are supposed to be present either in the scar-tissue bases or in the submucosa of gastric ulcers.

Simple chronic gastric ulcers have never, in the author's experience, presented any visible epithelial rests which could scientifically be termed prenatal. Neither has he seen post-natal epithelial rests in

the mucosa, submucosa, or ulcer base, that were not composed of either atrophic epithelium or real carcinoma, the latter condition being present in the base or submucosa only when there was extensive involvement of the mucosa.

In the simple chronic ulcer one frequently finds the glands composed of columnar or cuboidal cells, regularly arranged with oval or round nuclei, which are almost always of the same size and placed near the bases of the cells. The cells are sharply demarcated from the stroma, which consists of fibroblasts, differentiated fibroblasts, and some lymphocytes, all of which form a histological picture distinguishable from the normal gastric mucosa with great difficulty. From this picture to carcinoma there are transitional apparently intermediary pictures the extremes of which are easily distinguishable.

The epithelial cells of the glands in some ulcers lose their cuboidal or columnar shape and regularity in size and arrangement. They become oval or round and the nucleoli become larger and more distinct. The exact origin of these cells is at present unknown, since in the gastric gland there are not two distinct rows of cells normally present, as in the breast, prostate, skin, and the accessory epithelial organs of the skin. To the author's knowledge, a germinative layer of cells or a germinative focus of cells has not as yet been satisfactorily demonstrated.

The cells which are frequently found, however, present a morphological picture which is indistinguishable from that seen in secondary epithelial hyperplasia in other organs having a germinative layer which is the origin of cancer-cells.

Various degrees of intraglandular morphological changes are found in the borders until the cells become indistinguishable from cancer-cells. When such a condition is found, careful search frequently demonstrates a lack of demarcation between the gland and the stroma, and epithelial cells may be seen in the stroma, the latter condition being accepted by general pathologists to be the histological criterion of cancer. When cancer is definitely present in the mucosa or other coats of the stomach the intraglandular cells always present the condition which has been described as secondary hyperplasia in other organs.

From a cytological standpoint MacCarty sees no objection to denoting the condition as secondary hyperplasia in the stomach. It is apparent that the histogenesis of cancer in the stomach bears an analogy to that in the breast, prostate, and skin, with the one exception that the germinative stratum or focus has not been demonstrated, a condition which differs from primary epithelial hyperplasia in the organs just mentioned.

From these facts it may clearly be seen that the gastric cancer-cell arises from intraglandular hyperplastic cells of the mucosa, and represents a malignant end-stage of a process of hyperplasia of normal cells.

Levy, R.: The Association of Carcinoma with Round Ulcer of the Stomach (Über gleichzeitiges Vorkommen von Carcinoma und Ulcus rotundum ventriculi). *Beitr. z. klin. Chir.*, 1914, xciii, 696.

The relation between ulcer and carcinoma has been discussed rather fully of late without any more definite results having been arrived at. Practically it is difficult to decide the important question of how often a cancer develops upon an ulcer basis. Since Payr published his results, however, conclusions have been drawn that probably are erroneous. The histological examination of specimens of stomach resected for ulcer have shown cancer in 26 per cent — a cancerous metamorphosis of the ulcer. These figures, however, can hardly be accepted since all clinical and histological evidence is omitted in the article.

Payr found cancer present in 26 per cent of his cases of ulcer callosus, but that does not prove that 26 per cent of his ulcer cases developed a carcinoma upon the ulcer. It merely means that the callous ulcers were not ulcers but cancers primarily. Küttner likewise published 30 cases of callous ulcers, 43.4 per cent of which were carcinoma. This is repeatedly quoted in the literature as meaning that 43.4 per cent of his callous ulcers later developed cancer. This is far from what Küttner meant; he merely called attention to the fact that in many cases it is impossible to differentiate between a callous ulcer and cancer, and that in reality many of his callous ulcers were cancers primarily.

Of especial interest are those cases in which round ulcers are found alongside of cancers. The author publishes two more cases of this kind.

One case was a cancer of the pylorus, alongside of which two ulcers were found. Upon microscopic examination it was shown that the cancer developed upon the site of an old scar. The symptoms were those of cancer primarily. The other case gave a typical history of ulcer until shortly before the patient came to the clinic, when the symptoms changed to those of cancer. The histological findings, however, gave no evidence that the cancer developed upon the site of an old ulcer.

It is a question whether it is possible clinically to decide whether a cancer develops upon an ulcer site or not. These cases have proven that a cancer may develop upon the site of an ulcer; that alongside of the cancer, ulcers may be present without giving symptoms sufficient for a diagnosis. On the other hand, it is possible occasionally to make a diagnosis of ulcer and cancer, as in the second case, without being able histologically to prove that the cancer was on an ulcer basis. L. A. JUHNKE.

Decker and Bomhard, H. von: Röntgen Deep Irradiation in Carcinoma of the Stomach and Intestine (Die Röntgentiefenbestrahlung bei Magen und Darmkarzinomen). *München. med. Wchnschr.*, 1915, xxviii, 73.

Decker and von Bomhard have treated 21 cases of carcinoma of the stomach and intestine by rönt-

gen deep irradiation. They give the histories of three successful cases of stomach cancer and one of cancer of the rectum.

At first their results were not very encouraging. Many of the cases came for treatment so late that little could be accomplished; moreover, at first the doses given were too small. Their successful cases have been the most recent ones. They have never given more than 1,775 to 2,400 X, extending over a period of some months, while Bumm and Warnekros have given as much as 3,500 X in three weeks. The results are much better with the larger doses given at short intervals and with very hard tubes. In future much better results may be expected in carcinoma of the stomach, intestine, and œsophagus. There is little danger of injuring the skin by intensive irradiation. Decker and von Bomhard had only one case of slight erythema; it recovered in eight days without any treatment.

It is best to irradiate stomach cancer through the skin. There is no necessity of exposing the cancer through abdominal incision. Röntgen rays are to be preferred to radium or mesothorium, as a much larger field can be irradiated and the tumors can be irradiated from all sides by means of the so-called cross-fire method.

Every case of inoperable carcinoma of the stomach or intestine should be given intensive röntgen treatment. A. Goss.

Carroll, W. C.: Intestinal Polyposis. *Surg., Gynec. & Obst.*, 1915, xx, 412.

Polypoid growths may occur at any point along the gastro-intestinal tract, usually in the large intestine and rectum.

A family tendency has been noticed in several cases. Doering states that Zahlman records an instance in which six brothers and sisters of the same family died of the disease. Obstruction and intussusception are not of uncommon occurrence in these cases.

Intestinal polypi may be single or multiple, the latter being more common. Malignant polypi high in the rectum have been the means of making a diagnosis of the primary growth higher up.

Symptoms vary with the size, position, and number of the polypi. Usually hæmorrhage, anæmia, diarrhoea, tenesmus, and vague abdominal symptoms occur. Eosinophilia may be present as in other intestinal conditions.

Treatment of this condition is essentially surgical.

A case was seen at the Mayo Clinic in a man 38 years of age of negative family and personal history. Three months prior to examination he had begun to lose weight and had several spells of nausea and vomiting with epigastric distress. The attacks continued off and on up to the time of examination. A large mass could be felt in the right lower abdomen. At operation it was found that the cæcum, the ascending, and one-half of the transverse colon were thicker and firmer than normal and the mucous membrane was covered with a

papillary growth. A resection of the affected portion was made.

Microscopically the specimen showed a marked increase in the glands, which were lined with a single layer of columnar epithelium with many goblet cells. There was also a marked lymphocytic infiltration of all layers of the intestine.

Imboden, H. M.: Röntgen Diagnosis of Lesions of the Vermiform Appendix. *Am. J. Röntgenol.*, 1915, ii, 581.

For examination of the appendix, having the patient in a horizontal position with the diaphragmed tube under the table, the fluoroscopic screen on the abdomen and some means of palpation are essential; for the latter Imboden prefers using the gloved hand and a four-inch gauze bandage (roll). The vertical and Trendelenburg positions should also be used in determining fixation. Caldwell has just built a table by which all these positions may be easily secured. Far more appendices can be visualized by the opaque meal than by the enema.

The pathologic effects of inflammation of the appendix are peritoneal adhesions, obliteration or strictures of the lumen, and the presence of concretions. The last of these occasionally can be demonstrated by the X-ray, and the other three conditions sometimes may be inferred from the following manifestations: drainage, position and direction, kinks and obliteration, size, length and caliber, mobility, and points of tenderness. The mere presence of some of the opaque meal in the appendix is no indication of chronic disease. Delay in emptying beyond 24 hours after the cæcum is empty, or after vigorous catharsis, or if delayed emptying is associated with a distinct area of tenderness, is to be regarded with suspicion. Chronic disease is not dependent upon the position of the appendix, but is more often found in the following positions: posterior and external to the cæcum with the distal end directed upward and meeting within the peritoneal cavity; posterior and external to the cæcum and without the peritoneal cavity; and directly behind the cæcum, often just behind the ileocolic valve. A tender area located in the course of the appendix must always be regarded as very suspicious.

ALBERT MILLER.

Stanton, E. M.: The Sequence of the Pathological Changes in Acute Appendicitis and Appendicular Peritonitis. *Am. J. M. Sc.*, 1915, cxlix, 524.

Stanton reports on pathological studies of 539 appendices removed during or within ten days following an acute attack of appendicitis, classifying the data with reference to the symptoms, thus tracing the processes of inflammation and repair. There is found to exist a striking general similarity in the fundamental pathological changes as they occur at each of the succeeding periods following the onset of the symptoms.

In every case of acute appendicitis on the first

day there was definite blocking of the lumen of the organ; proximal to this the changes were slight, while distal to the obstruction the lumen was distended to its maximum diameter; there was a deposit of lymph on the peritoneal surface, and at the end of twenty-four hours there was microscopic evidence of gangrene.

Catarrhal appendicitis was not found as a primary condition and was present only in those cases operated upon during an interval, or in appendices removed incident to some other abdominal operation.

The peritoneal lesion of the first day is a fibrinous or serofibrinous exudate, and may be ignored from a surgical viewpoint.

The changes on the second day are characterized by an intense leucocytic infiltration of all coats, accompanied by ulceration of the mucosa, and a well marked fibrinopurulent peritoneal exudate, accompanied by an increase of the areas of gangrene.

On the third day the process of destruction reaches its maximum, and in the non-malignant cases there are evidences of repair.

The peritoneal changes on the second day are of two types, either a localized fibrinous peritonitis or a diffuse peritonitis, and it is in the latter cases that appendicitis has its greatest mortality.

Purgatives greatly aggravate the inflammatory condition, and their administration is followed by perforation and peritonitis. The earlier the peritoneum is put at rest and food and purgatives withheld the more localized the condition will be.

In the fourth, fifth, and sixth days in the less severe cases the repair progresses rapidly, while in the more severe cases there are evidences of the formation of true abscess cavity formation, but not until the seventh or eighth day are the walls sufficiently strong to permit manipulations incident to packing of the uninvolved intestine preparatory to drainage.

D. L. DESPARD.

Jones, G. I.: Colonic and Pericolonic Abnormalities. *Am. J. M. Sc.*, 1915, cxliv, 388.

The author believes that colonic and pericolonic abnormalities are due to a degeneration of the physique resulting from disregard of the organs of digestion.

There are three important factors that are productive of colonic conditions with membrane formation: nervousness, producing colonic atony; inflammation; and mechanical conditions, as diverticulum, kinks, etc.

The sequence of the formation of pericolonic membranes seems to be (1) colonic or cæcal stasis, (2) fermentation, (3) dilatation, (4) otosis, (5) inflammation, (6) bacterial invasion, and (7) toxic osmosis.

The clinical aspect early is medical only and the condition is relieved by proper medical, hygienic, and dietetic measures.

The persistent dull indefinable pain over the ascending or transverse colon or attacks of acute pain in the same region, colonic distention, flatu-

lence, absence of diarrhoea, neuroses, neuralgias, arthropathies, and the persistence of organic elements of decomposition in the urine indicate deformity or membrane formation.

Surgical procedure will give little promise of permanent cure if patients are allowed to revert to the same dietetic errors that originally produced the condition.

D. L. DESPARD.

Maylard, A. E.: When, Where, and How to Open the Bowel in Cases of Chronic Obstruction of the Large Intestine. *Clin. J.*, 1915, xlv, 129.

By chronic obstruction is meant the effects produced by any mechanical agent which more or less completely inhibits the passage of flatus or fæces. These effects are often of such a nature that the patient does not appear to be acutely ill. The symptoms are chiefly those of abdominal distention, with, possibly, visible peristalsis. Occasionally there are colicky spasms and these may evoke vomiting, which is usually of a bilious character. The patient, as a rule, complains more of a sense of discomfort than of actual distress. In these cases a radical operation is contra-indicated until the obstruction is properly relieved.

By far the majority of cases are met with among patients who have passed middle life, and in most instances the obstruction is dependent upon malignant disease of some part of the large intestine. It must, however, be borne in mind that obstruction may find its cause in fibrous bands or membranes, the result of inflammatory adhesions, compensatory attachments, or defective developmental processes, any of which may result in symptoms which do not serve to distinguish one kind of lesion from the other.

Failing to find any clear evidence of the seat of obstruction, as can be ascertained by physical examination or by the symptoms present, the abdomen is opened by a median incision below the umbilicus and the nature and locality of the lesion sought by the hand or fingers.

In the case of inoperable disease of the rectum or pelvic colon, an artificial anus is made in the left iliac region; that is to say, the iliac colon is opened. In selecting this region for the permanent "anus," the fæces have passed through the greater part of the large intestine, have become more typically solid and faecal in character, and have become more amenable to the normal physiological processes whereby the habit of regular evacuations may be cultivated.

In the case of operable disease of the rectum or pelvic colon, a right lumbar colostomy is preferred, as the necessary soiling of the parietes by the continuous faecal discharge is well away from the abdominal incisions subsequently needed for the radical operation, so that the skin can be efficiently sterilized beforehand and the wound equally guarded from infection afterward.

In the case of inoperable disease of the iliac and descending colon and in the region of the splenic flexure, an artificial anus is made in the transverse

colon; that is, through the lower epigastric region. Where it is possible to plant the ileum into the pelvic colon later, a right lumbar colostomy should be the seat of election.

In the case of operable disease of the iliac and descending colon and in the region of the splenic flexure, colostomy is performed in the right lumbar region.

In the case of inoperable disease of the transverse colon, either an artificial anus should be made as high as possible in the ascending colon, or a right lumbar colostomy performed. In the case of operable disease of the transverse colon, a right lumbar colostomy should be performed.

In the case of inoperable disease in the region of the hepatic flexure, either an artificial anus or a colostomy should be performed in the right loin.

In the case of operable disease in the region of the hepatic flexure, a colostomy should be performed in the right loin; that is to say, the ascending colon should be opened.

In the case of inoperable disease in the ascending colon, a cæcostomy should be performed.

In performing colostomy, care should be taken to secure the bowel to the margins of the parietal wall by a few stitches before tapping it. A Paul tube is introduced and secured with a purse-string suture.

One of the simplest methods of making an artificial anus is to withdraw a loop of colon just far enough to allow a glass rod to be pushed through the mesentery. This rod, resting upon the abdominal parietes, secures the gut and sufficiently applies the bowel to the margins of the abdominal incision that no stitches are needed. The bowel is opened and a Paul tube fixed into the proximal end by a suture which encircles the gut. In the course of a week the projecting loop may be excised, thus leaving two orifices, the one above the artificial anus, and the other an opening below that possibly can be utilized for flushing the diseased segment.

EDWARD L. CORNELL.

Carman, R. D.: Diverticulitis of the Large Bowel.
Ann. Surg., Phila., 1915, lxi, 343.

Carman reports three cases of diverticulitis with röntgenologic findings. The patients were generally inclined to obesity. The fairly constant symptoms were abdominal pain, usually severe, often localized in the sigmoid or descending colon; constipation was the rule. Vesical symptoms, as frequency and tenesmus, were occasionally noted. In every case where the sigmoid was involved a mass could be felt. Proctoscopic examination was positive in one case where a partial intussusception had taken place. That blood was absent from the stools is explained by the fact that the inflammation was extramucosal.

The X-ray showing the position of the cæcum aids in differentiating it from left-sided appendicitis. It is a more difficult diagnosis to differentiate it from carcinoma. Filling defects may be present

in the X-ray plates in both carcinoma and diverticulitis, but the presence of extraluminal shadows would be a strong argument for diverticulitis. Where a carcinoma has developed upon a diverticulitis, the plates would show the characteristic extraluminal shadows, while if these shadows were absent the growth would be considered a carcinoma.

Phleboliths or calcified glands may give shadows resembling diverticula filled with barium; if they are situated high in the sigmoid, palpation during a screen examination may reveal the fact that they do not move with the bowel. Lower down the bowel is not sufficiently movable to make this differentiation.

The opaque ingested meal offers less chance than the enema of detecting the diverticula; better results are obtained if the enemas are injected under some pressure.

D. L. DESPARD.

Foges, A.: Report of 4,000 Rectal Endoscopic Examinations (Bericht über 4,000 rektale Endoskopien).
Wien. med. Wchnschr., 1914, No. 40.

After making 4,000 endoscopic examinations of the rectum, the author is convinced that the method is absolutely without danger, as not a single injury resulted. All accidents heretofore reported cannot be laid to the method. He performed the examinations with the patient in the high, lateral, prone position, with the pelvis elevated. Anæsthetics were never needed. The method is valuable primarily in the early diagnosis of cancer, which frequently grows insidiously and without pain. A diagnosis of cancer can be suspected frequently if, through the stenosis, mucus and thin brown-red strands of fæces are passed. In 72 cases polyposis was found. Inflammatory changes in the lower bowel are important findings for the internist; above all proctitis and sigmoiditis ulcerosa and hæmorrhagica. A negative finding is also important in carcinomophobic cases.

L. A. JUHNKE.

Ach, A.: Pathogenesis and Treatment of Prolapsus Recti (Pathogenese und Therapie des Prolapsus recti). *Beitr. z. klin. Chir.*, 1914, xciii, 251.

The views existing in regard to the causation of prolapsus recti are not uniform. There is considerable difference between the older view of Esmarch and the newer as brought out by Jeannel. Esmarch believed that prolapse was due to loosening of the lower attachments of the rectum induced by the prolapsed anus and laid especial emphasis upon the preceding catarrh of the bowel. Jeannel believes that the prolapse is due to stretching and loosening of the upper attachments of the rectum and also lays considerable stress upon the preceding obstipation. Both, however, consider the intra-abdominal pressure as the exciting factor.

Waldeyer and Ludloff have brought new views into the controversy. The anatomical facts brought out by Waldeyer deserve consideration. He believes that the rectum begins at the level of the third sacral vertebræ and is divided into two parts,

the pelvic and the perineal. The former extends from the third sacral vertebra to the opening in the pelvic diaphragm to the level of the lower end of the prostate in the male, the latter from the opening in the pelvic diaphragm to the anus. The pelvic portion extends in a slanting direction from high up and posterior to low down and anterior and is concave anteriorly. It is dilated considerably at the ampulla and is relatively freely mobile. The perineal part is much narrower and firmly "built in" within the pelvic floor. About 7 cm. above the anus the plica transversalis appears and narrows the lumen of the pelvic portion. Above, the pelvic portion is attached to the pelvic colon and by means of the pelvic mesocolon to the promontory, also by means of the peritoneum, which extends from the bladder and forms the cul-de-sac to the anterior surface of the rectum, to the promontory. The rectum is further surrounded by the fascia rectalis attaching it to the sacrum. This attachment, however, is loose, as considerable fat is placed between the rectum and sacrum and between the fascia and rectum, allowing considerable mobility in the sagittal direction.

Of deciding importance in the pathogenesis of rectal prolapse is the relation of the rectum to the peritoneal sack. The peritoneum follows the walls of the abdominopelvic space—the bones constituting the pelvic cavity—closely in all directions except that of the excavatiorectovesicalis. There remains a space between the peritoneum, sacrum, and pelvic diaphragm. With each compression of the abdominal cavity the cul-de-sac is forced into this space as being less resistant. This renders it an internal hernia. Behind and below this physiological hernial sac (excavatiorectovesicalis) the rectum traverses slantingly downward above the split in the pelvic diaphragm. Under severe abdominal pressure the anterior wall of the rectum is naturally forced into the defect in the pelvic diaphragm. Under normal conditions there are various hindrances; the rectum being a muscular tube contracts firmly to resist the abdominal pressure. The entire region around the rectum is further surrounded by an abundance of fatty tissue, but as the normal peritoneum in this region is rather firm too great an excursion is not permitted. In patients with rectal prolapse, however, the tissues through various causes have lost this resistance or are abnormally developed.

In the different classes of patients in whom rectal prolapse occurs a very large group of men will be found who have suffered a long time with chronic obstipation, or others who have had typhoid or dysentery. We must conclude that in this group the rectal musculature is paretic and cannot offer sufficient resistance. These patients are usually thin, and hence lose the resistance which normally is offered by the deposited fat. Another group consists of women at the height of their fructivity or in the menopause in whom hernias, especially diastasis of the recti, are common. A third

group consists of children. In these chronic catarrh of the bowel is the causative factor, which also produces an atrophy of the musculature and results in an abuse of the abdominal pressure. Other anatomical factors favor prolapse in children. The coccyx is but an elongation of the sacrum; the excavatiosacrococcygea does not exist; the muscles of the pelvic floor are poorly developed.

In all these patients the excursions of the excavatiorectovesicalis are not counteracted adequately. The peritoneal pocket is deepened, and into this pocket loops of bowel prolapse and the cul-de-sac becomes a hernia. This hernial sac, of which the rectum is the posterior wall, allows the anterior wall of the rectum to prolapse downward more and more and loosens the fascial connection to the prostate. At this point, however, the plica transversalis protrudes into the lumen of the bowel. Just as the valve of Bauhin advances into the colon in invagination of the ileum into the cæcum, so does the plica transversalis prolapse into the dilated ampulla, and ultimately the entire ampulla is everted and appears as a rectal prolapse at the anus. In this manner the prolapse has the characteristic flattened cone shape with transverse oval lumen, containing in its anterior lip the hernial sac, with or without contents. It is evident, therefore, that the prolapse is not primary and is secondarily followed by a rectocele, but that primarily a hernia of the bowel develops through the pelvic floor at the rectal slit. This is different from other hernias only in so far as that the posterior wall of the sac consists of the rectum itself, whose upper attachments have gradually become loosened as a result of the traction exerted by the hernia.

In regard to treatment we must consider the palliative and the operative. The palliative treatment consists of medicine employed internally for the existing enteritis and the general weakness, and, externally, consisting of astringent and caustic properties to improve the local condition. Here must also be mentioned the bandage apparatus therapy, the adhesive supports as well as the so-called rectum supports, also the massage and electrical treatments. The latter attempts to improve the tone of the rectal musculature as well as that of the pelvic floor. All these methods are of value in the prolapse of children, in which many cures are obtainable. By means of the Thure-Brand massage treatment considerable improvement was also obtained among adults; cures, however, were not observed. Among adults the operative treatment alone must be considered, and this varies according to the conception the individual operator has of the etiology of the disease. The different methods may be classified into the three following groups:

The first method has for its principle the narrowing of the sphincter and the strengthening of the pelvic floor. This is accomplished by the simple silver-wire method of Thiersch. The principle has been expanded until it includes the external plica-

tion of the entire rectum with plastic operations on the pelvic floor.

The Rehn-Delorme method is the most advanced of the methods of this group and really is the simplest of the second-group methods, which include the total resection of the prolapsed rectum according to Nicoladoni and Mickulicz.

A third group consists principally of the suspension methods. In this group belong the rectopexy of Verneuil and König. Jeannel, von Eiselsberg, and Ludloff suspend the rectum high up either ventrally or sacrally, either with or without resection or short-circuiting the sigmoid. Others bring up the rectum and attach it extraperitoneally, endeavoring to secure firm adhesions to the pelvic wall. Although all of these procedures are adapted and successful in a good many cases, nevertheless recurrences are frequent. Ach attributes the failures to the fact that no definite fixation material and no correct point of fixation are given, as fixation to the peritoneum cannot be considered sufficient. To overcome this he employed a strip of fascia from the fascia lata 25 cm. long and 8 cm. broad. One end of this is split in half and one strip is carried around the rectum circularly and fixed to it with a series of sutures. The other strip is brought down low between the rectum and vagina and is sutured to the lower part of the rectum and above that to the upper part of the vagina. The other end of the fascial strip is brought extraperitoneal, liberating the right ureter and undermining the peritoneum through the right broad ligament to the right horizontal area of the pubic bone. After drawing the strip of fascia taut, thus elevating the rectum and vagina as much as possible, it is anchored with interrupted sutures to the right ligament of Cooper. The free edge is further fixed to the edge of the abdominal muscles and fascia.

The author has employed this method in two severe cases with excellent results, the cases having remained free of recurrence two years and eight months. He recommends it for all severe cases.

L. A. JUHNKE.

Pennington, J. R.: Treatment of Hæmorrhoids by the Open Method. *J. Am. M. Ass.*, 1915, lxiv, 1136.

The palliative treatment consists in keeping the bowel movements soft and regular, together with application of stimulating agents and astringent lotions or ointments.

The operative treatment consists in excising sufficient of the covering of such varicosities so that when the pathologic condition is removed the operated field will resume its normal state and relation to the contiguous parts. This can best be done by that method of operating which radically removes the pathologic condition present, traumatizes the tissues least, gives least pain, keeps the patient from his work the shortest period of time, is the safest and freest from danger and preserves the normal contour and function of the rectum.

The author operates on 90 per cent of his cases by blocking the field of operation; he usually employs from one-quarter to one-half grain of cocaine in solution and about 1 to 2 grains of quinine and urea hydrochloride in the same manner. The cocaine is employed in the strength of from 0.25 to 0.5 per cent; the quinine and urea hydrochloride in from 0.5 to 1 per cent solution. Sometimes the two solutions are combined. The cocaine is used for its immediate effect, and the quinine and urea hydrochloride for prolonging the anæsthesia.

He usually anæsthetizes the perianal skin first, and then the muscles and perirectal structures. A puncture being made in the median raphé about one inch posterior to the anus, the needle is carried from this point first around one and then the other side of the anus to the anterior median raphé, depositing the solution in its course. The needle is next introduced into the muscles and up along the sides of the rectum, anæsthetizing these structures.

For the deeper tissues, the needle is usually inserted into the anterior and posterior median raphé, also in the right and left lateral quadrants and is carried up along the lateral walls of the rectum.

In the thrombotic pile, an ellipse commensurate with the size of the pile is removed from the covering of the clot, the latter picked out and the dressing applied. The author usually dresses the wound with rubber-dam and covers this with gauze, or petrolatum and gauze and a T-bandage. There is little or no after-pain and the patient is well in a very short time.

Because the internal piles are located in the proximal, or rectal, cone it is necessary to bring them into view. This, after gently stretching the sphincter, is done by means of four T-forceps. *Vis à tergo* pressure is made at the base of each pile, forcing it into the field of operation, and an ellipse varying with the size of the swelling is removed from the covering of the varicosity by means of scissors curved on the flat. Frequently this procedure also destroys the pathologic condition; if it does not, this is readily accomplished by another and deeper cut with the scissors.

The "fleshy pile" is treated in a similar manner. A section is excised from the apex and then the inside of the pile is removed with the flat-curved scissors. Sufficient of the mass is removed so that the anal region will assume a normal surface when the operation is completed. The field is then cleared of blood-clots, and a rubber-covered tampon, which dresses the field in extension, is introduced into the rectum. Hot wet dressings, a piece of protective, and a snugly-fitting T-bandage are then applied.

The dressings and tampon are removed in from 18 to 24 hours and the hot fomentations continued. In 6 or 8 hours thereafter an enema of 3 ounces of olive oil and a laxative are given. The patient does not use a bedpan, but gets out of bed and goes to the toilet; wet cotton is used as a detergent.

Hot fomentations are applied every 4 to 6 hours for a few days. The average patient is dismissed

on the third or fourth day after the operation. Occasionally one will remain a day or two longer; on the other hand, they frequently leave earlier.

EDWARD L. CORNELL.

LIVER, PANCREAS, AND SPLEEN

Mayo, C. H.: Papillomata of the Gall-Bladder.
Tr. Am. Surg. Ass., Rochester, Minn., 1915, June.

The author states that few operations on the gall-bladder are of recent development. The not infrequent discovery of an apparently healthy gall-bladder in operations for gall-stones caused general exploration to become a routine procedure. Thick-walled gall-bladders without stones were next drained or removed. Later came the appreciation that a diseased mucosa could exist in a gall-bladder of healthy external appearance. If inflammation is from bacterial infection the lymphatics draining the diseased area are enlarged and soft in acute processes and harder in chronic processes. If there are no gall-stones and there is little change in the appearance of the gall-bladder the lymphatic glands on the cystic duct and along the hepatic and common ducts should be palpated. If they are found to be swollen without other adequate cause the gall-bladder should be removed. If the glands are not swollen and no stones are found, search must be made for other sources of symptoms. Rosenow's theory of the cause of this inflammation seems plausible. Bacterial invasion of the wall of the gall-bladder may cause changes in its circulation, with œdema, infiltration, exudation, swelling of the lymphatic glands, and local necrosis of the mucous membrane.

Papillomata of the gall-bladder occur in the same manner, but instead of a primary destructive effect there occurs locally an overgrowth which may later become necrotic. Papillomata were found in 107 of the 2,538 cases of cholecystectomy in the Mayo Clinic from January 1, 1907, to June 1, 1915. From a surgical standpoint it is important to note that the papillomata of the gall-bladder are not cured by temporary drainage, but that cholecystectomy should be performed.

Cole, L. G., and George, A. W.: The Röntgen Diagnosis of Gall-Stones by Improved Methods.
Boston M. & S. J., 1915, clxxii, 326.

The authors give a brief history of the literature on the detection of gall-stones, to support the statement that while gall-stones have been detected by X-rays to an appreciable extent only within the last few years, the interest since 1913 has been steadily growing, and several observers have worked along nearly the same lines, although independently of each other.

As gall-stones are estimated to exist in 10 per cent of all adult cases complaining of gastric symptoms, and as they have been detected in 5 per cent of such cases, röntgenologists have supposed they could find them in about 50 per cent of all cases where they

are present. Since studying the gall-bladder region with more careful attention to detail, however, and employing a certain technique the authors believe they can detect stones about twice as frequently as formerly.

Because of the large number of cases where a correct positive diagnosis can be made, the negative diagnosis becomes relatively important. The technique is not materially different from that employed for soft tissues in any other part of the body, but it requires conscientious attention to the most minute points, and because detail is essential to accurate diagnosis the soft "monotonic" plates obtained by the use of the Coolidge tube are most desirable.

Cole uses a small focal point with a long exposure, while George, believing speed is essential, uses a fairly large focal point and an exposure short enough to practically eliminate the effect of involuntary motions of the body. The use of a small cone is particularly advised, as it prevents much of the generating of secondary rays and makes it possible to show a calculus which would be indistinguishable with a large cone. It may be pointed obliquely downward, or the relation of the patient to the tube may be altered by a slight rolling from side to side, or by a lateral position.

Röntgen stereoscopy adds very materially to the interpretation of the plates, but comparison from behind avails little. The entire region from the eleventh rib to the crest of the ileum, or even lower should be included in the examination. A filter should always be used to prevent dermatitis, as fifteen or twenty plates should be made. After such an examination, if no direct or indirect evidence of gall-stones is obtained, the clinical history should be very positive before operation is resorted to. A complete gastro-intestinal examination is advised in such cases to detect possible adhesions or lesions of another nature that might be responsible for the symptoms of which the patient complains.

The most important aid in interpreting röntgen plates is the method of matching the shadows together by superimposing the plates and holding them obliquely at arm's length against the northern sky. Identification of the gall-bladder is of great assistance in the detection of calculi.

Röntgenographically, gall-stones are divided into two definite groups: (1) stones which contain considerable calcium, and (2) cholesterine stones which contain no calcium or only a trace of it. The dense calcareous stones are found infrequently, and by far the greatest number of gall-stones consist of cholesterine nucleus with a calcareous coating, or vice versa. Those in which the coating is thin are the most difficult to find and with increased density they are proportionately easier to discover.

Some of the shadows that may be confused with gall-stones are those cast by intestinal contents, calcified mesenteric glands, costochondral ossification, stones in the kidney and liver, or food in the cap. Food in the cap, or feces in the haustra may

be eliminated by abstention from food and the use of a cathartic, which Cole advises in all cases but which George does not encourage.

Diagnostic accuracy is directly in proportion to the care exercised in making the examination and one's experience in detecting and interpreting the findings.

ARTHUR F. HOLDING.

Elting, A. W.: Abscess of the Spleen; Report of a Case. *Tr. Am. Surg. Ass., Rochester, Minn., 1915, June.*

Abscess of the spleen has been known to follow a great variety of acute infectious diseases, as well as some of a more chronic nature, especially those diseases associated with a splenic tumor. In many cases the original portal of entry for the infecting micro-organisms has not been demonstrable. Many cases of left-sided subphrenic abscess have undoubtedly been abscesses of the spleen. Abscess of the spleen always results from contiguous or metastatic infection, the latter being by far the more frequent. The bacteriology of the process has been very varied. Almost every variety of pyogenic organism has been cultivated from splenic abscess, while in some instances the pus has been sterile. Most abscesses of the spleen are embolic or thrombotic in origin, and develop in infected infarcts. Typhoid fever is the most common single cause of abscess of the spleen, with malaria next as an etiological factor. The prognosis is better in post-typhoid splenic abscess than in any other variety. In many cases of abscess of the spleen, there is a sequestration of spleen tissue, the sequestra varying in size from minute bits to the entire spleen.

The symptoms of abscess of the spleen are suggestive rather than distinctive. Enlargement of the spleen, pain in the splenic area, and inflammatory involvement of the diaphragm or pleura at the base of the left lung are the most important symptoms. Chills, fever, nausea, vomiting, and diarrhoea often occur and a marked leucocytosis is a frequent accompaniment. Radiography is of importance in making a diagnosis, but the most essential diagnostic measure is exploratory aspiration of the affected area.

The treatment is always surgical and should be splenotomy or splenectomy, usually the former. The operative procedure will be through one of three routes: (1) the transpleural; (2) the abdominal; and (3) the retroperitoneal. The prognosis of abscess of the spleen, recognized reasonably early and adequately treated surgically, is relatively good.

In the case reported by the author, the onset was sudden, with pain in the upper left abdominal quadrant, fever and prostration, with some enlargement of the spleen and a pronounced leucocytosis, with no definite portal of entry for the infection. This condition continued for 20 days, when the temperature became normal and remained so for 6 days, with marked improvement in every way. The temperature again became elevated and the signs all pointed to the splenic area. Numerous Widal reactions

and blood cultures were negative, but a high leucocytosis persisted. Repeated exploratory aspirations, as well as radiographs, produced negative results in the early stages. Finally, as the radiograph and the aspirating needle located pus in the region of the spleen, transpleural drainage was done and a sequestering abscess of the spleen disclosed. Cultures from the pus showed pneumococci. The patient improved for a time, but finally died, with all the evidences of a suppurating portal pyelophlebitis.

Mayo, W. J.: Surgical Considerations of Splenectomy. *Tr. Am. Surg. Ass., Rochester, Minn., 1915, June.*

Mayo lays down the premise that the safety of splenectomy depends on careful separation of the attachments of the spleen and the delivery of the organ without injury to the vascular pedicle. A longitudinal incision is made through the upper half of the rectus muscle, extended obliquely along the costal margin about an inch and one-half from it and up toward the ensiform cartilage. The longitudinal part of the incision may be carried down to any desired length.

Adhesions especially over the upper pole are occasionally vascular. It is best to separate these vessels with the fingers as close to the spleen as possible. Sometimes the adhesions are so strong they must be divided with a cutting instrument.

The bulk of the vascular attachments (*vasa brevia*) in the gastrosplenic ligament can be delivered with the spleen, the stomach being partly withdrawn from the abdomen before separating the ligament. In a large, adherent spleen the deep vascular connections may anastomose with the vessels along the spine and the crux of the diaphragm. These must be separated before the spleen can be eviscerated, controlling hæmorrhage by a carefully adjusted gauze tampon. The application of this gauze tampon temporarily to control bleeding from the deep attachments is very important, as the sources of hæmorrhage can not be seen and controlled until the spleen has been removed.

The tail of the pancreas, if present, should be separated from the splenic pedicle, its bleeding points ligated and the gland dropped back. In three splenectomies Mayo has tied off a portion of the tail of the pancreas with the splenic pedicle without any harm resulting.

Usually the vascular pedicle can be cleared and ligated in sections. The arteries should be tied first, but all vessels should be tied before any portion of the pedicle is cut. If the pedicle is short it may be grasped with elastic rubber-covered clamps, thus avoiding damage to attached viscera, such as the gastric wall, until the vessels can be secured. The two-forceps method of ligation is very satisfactory: two forceps are placed three-fourths of an inch apart on the pedicle and the spleen cut away without regard to back bleeding. A catgut ligature is thrown around the pedicle below the proximal forceps which

is then loosened and the ligature tied in the compressed area, while the distal pair of forceps steadies the pair and prevents retraction. A second ligature makes the pedicle secure.

Closure of the splenic space is important if there is any oozing of blood. Compression with the temporary tampon will seal the smaller vessels in a few minutes, but deep in the wound other vessels may require further treatment. With catgut on a small curved needle, the raw space beginning at the tied splenic vessels is closed as securely as possible by snaking catgut sutures which compress the bleeding vessels. The mortality depends more on the condition of the patient than on the technical difficulties of operation. But 5 of the 56 patients subjected to splenectomy died in the hospital, and autopsy showed that 2 of these were from preventable causes — hæmorrhage and sepsis.

Giffin, H. Z.: Clinical Notes on Splenectomy. *Tr. Am. Surg. Ass., Rochester, Minn., 1915, June.*

The author reviews in a general way the clinical characteristics of the 58 cases of splenectomy in the Mayo Clinic since 1904. One of the patients is alive and well eight years after operation. In this instance the history was analogous to that of splenic anæmia, while the spleen showed pathologically a lymphocytic hyperplasia, not, however, with any definite evidence of malignancy. The next longest period for which a patient has remained well is seven years. In this instance there was a clinical history similar to that of splenic anæmia, while pathologically the spleen showed endothelial proliferation.

Many types of splenomegaly are necessarily represented in this series and any classification of the cases is, of course, open to discussion and criticism. On the basis of their clinical and pathologic characteristics, they will be presented in groups as follows:

SPLENECTOMIES, APRIL 6, 1904, TO JUNE 9, 1915

	No. of Cases
1. Splenic anæmia.....	27
2. Gaucher type of splenic anæmia.....	3
3. Pernicious anæmia.....	7
4. Hæmolytic anæmia (marked splenomegaly).....	2
5. Secondary infectious or septic splenomegaly.....	5
6. Lues (marked splenomegaly).....	2
7. Hæmolytic jaundice.....	2
8. Cirrhosis of liver.....	1
9. Myelocytic leukæmia.....	1
10. Lymphoma or lymphosarcoma.....	3
11. Tuberculosis of spleen.....	1
12. Wandering spleen.....	2
13. Acute febrile non-septic (?) splenomegaly.....	1
14. Splenomegaly with marked eosinophilia.....	1
Total.....	58

Seven patients with pernicious anæmia have been operated on in the Mayo Clinic since August, 1914, with one operative death, two patients are at present in the hospital, while three of the patients showed marked temporary improvement.

The series includes one case of acute febrile non-septic splenomegaly, which is analogous in its clinical course to Egyptian splenomegaly, and one case in which splenomegaly was associated with an extremely high eosinophilic count. Splenic anæmia is, in the author's opinion, most favorable for surgical treatment. The operative risk is relatively low and the prospect for a return to normal health excellent. Removal of the spleen in non-gummatous splenomegaly and anæmia associated with syphilis has been attended with excellent results in two instances.

Elliott, C. A., and Kanavel, A. B.: Splenectomy for Hæmolytic Icterus: a Discussion of the Familial and Acquired Types with a Report of Splenectomized Cases. *Surg., Gynec. & Obst.*, 1915, xxi, 21.

The article comprises (1) a report of a splenectomy in a patient suffering from hæmolytic jaundice of the familial type; (2) a report of the genealogical tree of two families showing hæmolytic jaundice, with a study of various members of the families and the study of another case of acquired hæmolytic jaundice; (3) the collection of all of the reported splenectomies for hæmolytic jaundice and a tabulation of the results.

The patient upon whom the splenectomy was done was a man 54 years of age, who had suffered all his life from the acholuric crises of malaise, headache, tenderness over the spleen, and slight fever. On examination he presented a large spleen, marked anæmia, and a fragility of red blood-cells at 0.54 per cent. Following the operation the patient had an uneventful recovery, and two months later reported himself as having absolutely no icteric tinge, the urine was clear of urobilin, the red blood-cell count was normal, and in every way he could be said to be cured.

The authors draw attention to the fragility test of Chauffard and Widal and discuss the method of arriving at their results. The fragility test in the various hæmolytic cases examined varied from 0.46 per cent to 0.54 per cent at the beginning of the breaking down of the blood. The results of investigation as to the fragility in the splenic artery and splenic vein of dogs showed that the artery in the majority of cases presented a higher fragility of its cells. In discussing the pathogenesis, the authors lean to the assumption of Eppinger which explains the destruction under the title of "hyper-splenism."

The results of the study of cases of splenectomy for this condition show that practically all of the cases made complete recoveries after operation. There were two primary deaths. The average weight of the spleens removed was 1,000 grams. Liver crises due to the passage of excessive, thickened bile or of gall-stones were present in six cases operated upon, and in four of these gall-stones were found.

The pathology showed an absence of connective-

tissue proliferation with a constant infiltration of the pulp of the spleen with the blood-cells. There was no connective-tissue proliferation and no increase in the size of the liver.

The authors recommend splenectomy in these cases and believe that the operation should be performed early, particularly in younger individuals

where it would not seem advisable to wait for marked disability and the development of a large splenic tumor. On the other hand they draw attention to the fact that where there is an absence of disability it is inadvisable to operate, as these patients may live to old age without any serious complications.

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS. CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Warbasse, J. P.: *The Physician's Responsibility in Acute Osteomyelitis.* *J. Am. M. Ass.*, 1915, lxiv, 1293.

The author emphasizes the importance of early diagnosis of acute osteomyelitis, a disease for which surgery is the only treatment, and in which expedience is more necessary than skill. The diagnosis is easy, two symptoms sufficing, pain of rapid onset in a long bone and high fever. Because of the solidity of the walls of the marrow cavity the characteristic swelling of the inflammatory process cannot take place and the result is pressure which results in ischæmia and necrosis of the bone. If not recognized early, not only this local necrosis occurs, but secondary bone abscesses form and a general septic condition results, threatening meninges, heart valves, and every other organ.

Cases are reported which had been treated for rheumatism, neuralgia, scurvy, and other diseases by various medical means for weeks or months until the shaft of the bone was completely destroyed or until general sepsis and death had occurred, when a simple opening made in the bone at the beginning of the infection would have resulted in cure. The treatment is wholly surgical and is so simple that even the poorest surgery can not do as much harm as the disease. It is the duty of the general physician to see that such cases have proper surgical attention in the beginning and to avoid temporizing by medical treatment.

W. A. CLARK.

Symonds, C.: *Chronic Abscess of Bone; Its Treatment.* *Guy's Hosp. Gaz.*, 1915, xxix, 120.

The author regards silver wire or silver tubing as the best instrument for maintaining drainage of a chronic bone abscess. The objection to rubber is that the bone sinus tends to close over it so that the opening becomes too small and the drain is then left out.

Because of the necessity of long-continued drainage—eight or ten years in some cases—a metal tube which will keep the bone sinus open and which can be taken out, boiled, and reinserted easily by the patient if necessary is most valuable. A solid drain works about as well as a tube. Patients are able to be up and go about their duties, even those of

a 'bus driver or a cavalry officer while wearing these drains.

Several cases are reported which show that bone abscess, while acute in origin, usually becomes subacute or chronic, lasting over many years. One case, a woman of 70, has had an abscess in the femur for over forty years and will probably have to wear a metal drain the rest of her life. The older the patient the more retarded is the recovery. Children recover very quickly with proper drainage.

W. A. CLARK.

Delitala, F.: *Contribution for Study of a Typical Disease of the Upper End of the Femur (Perthes' Disease).* *Am. J. Orth. Surg.*, 1915, xii, 555.

In 1913 Perthes first described a disease of the hip of non-tubercular type occurring unilaterally in children from five to ten years of age, which he calls osteochondritis. The condition seems to be rare, as published cases do not exceed fifty including those referred to under some other name. There is some evidence that the disease is familial in character. Eighty per cent of reported cases were boys. There is no tuberculosis or luetic basis, the disease appearing during periods of general good health. Prominent symptoms are lack of assurance in walking, a slight swing to one side, and fatigue; pain does not cause any serious disturbance. There is shortening, and muscular atrophy, and limitation of abduction.

Röntgen pictures show alteration in the femoral neck and epiphysis. There is a rarefaction in the neck near the epiphysis, and the upper epiphysis and head are flattened, crushed, or even divided in pieces. In differential diagnosis the röntgen ray is most valuable, as the disease simulates coxa vara and other juvenile deforming arthritides very closely in clinical signs and symptoms. The course of the disease is said to be of a benign nature and the prognosis good as to ultimate recovery with functional integrity.

The author discusses at some length the nature of the disease as compared with other juvenile hip troubles, especially coxa vara. The name coxa vara capitalis has been suggested by Levy, but this term is not applicable in all cases, as the change in the angle of the femoral neck is secondary to the disease and is not present in every case.

One case examined at operation by Perthes showed normal joint fluid and synovium, a flattened

head, and an irregular distribution of cartilage in numerous islands connected by thin plates of cartilage. The cartilage was histologically normal, as was also the hard and spongy bone and the marrow. He regards the islands as proliferations of cartilage rather than a result of cicatrization. Six cases observed by the author are reported. These 6 were all that were found in 1,500 cases of hip affection, which indicates that the disease is rare.

W. A. CLARK.

Allison, N.: Tuberculosis of the Hip; An Analysis of Twenty-Five Selected Cases. *Am. J. Orth. Surg.*, 1915, xii, 623.

The author reports 25 cases of tuberculous hip disease treated at the St. Louis Children's Hospital within the last four years. These cases have gone on to recovery in that they have ceased to have symptoms and now have weight-bearing joints.

Diagnosis was made positive in so far as clinical tests go. The cases have been under frequent observation and have been studied by frequent examinations and radiograms.

Allison states that he is not of the opinion that an ankylized joint is the best result that can be obtained in the treatment of hip disease, and he feels that what Lorenz calls the "weight-bearing therapy" is an incomplete and careless method of treatment. He believes that the Bradford abduction and traction splint is the best treatment during the convalescent stage, and he does not believe in allowing weight-bearing, as is done in the treatment with plaster of Paris spicas.

The author gained the following from his studies:

1. The average shortening where plaster of Paris spicas were used was 1.45 inches; with the Bradford traction abduction splint 0.56 inches.

2. The average atrophy of the thigh with spicas was 1.47 inches and of the calf 0.5 inch; with splint the atrophy of the thigh was 1.27 inches and of the calf 0.76 inch. From this the author concludes that the use of traction does not materially increase the amount of atrophy.

3. Motion was preserved in all hips treated with traction and was lost in 60 per cent of the cases treated with spicas.

4. Abscesses occurred in $33\frac{1}{3}$ per cent of the cases treated with spicas and in 40 per cent of those treated with splints.

5. Of the cases treated with spicas there were 6 cases which developed complete bony ankylosis. In 5 it was necessary to do an osteotomy in order to correct adduction and flexion deformity. Two of the cases recovered with motion through 45 per cent in flexion.

6. Of the cases treated with the traction abduction splints no case resulted in bony ankylosis and in no case was it necessary to correct deformity by osteotomy. All of the hips were held in a position of abduction.

The author reports several of his cases illustrated with radiograms.

LYDD T. BROWN.

Packard, G. B.: The Management of the Convalescent State of Hip Disease. *Am. J. Orth. Surg.*, 1915, xii, 666.

The author warns against discontinuing treatment of tubercular hips until it is positively assured that the disease is completely arrested. Freedom from pain and muscular spasm does not necessarily mean an arrest of the disease. The position of the limb is a more reliable guide. Adduction is a clinical expression of joint irritation and when present together with flexion is sufficient indication for continuing treatment. Röntgen pictures are also valuable in determining the course and state of the disease. If the size of the acetabulum is increasing and the size of the head diminishing, the process is still active. The best method of treatment in the convalescent stage is a plaster spica holding the leg in abduction, but in some cases protection from weight-bearing is necessary. Adduction and flexion should be prevented during treatment, but trauma by application of too much force or by open operation is to be avoided while the disease is progressive. The author reports a case in which it was necessary to continue treatment for seven years, a discontinuance at the end of two, four, and five years having been followed in each instance by recurrence of adduction and flexion. Many cases of hip disease are discharged as cured while the disease is still progressive.

W. A. CLARK.

Sever, J. W., and Fiske, E. W.: Tuberculosis of the Knee-Joint in Childhood; a Study of 638 Cases. *Am. J. Orth. Surg.*, 1915, xii, 597.

Sever and Fiske review 638 cases of knee-joint disease in childhood. Tuberculosis of the knee occurs somewhat more frequently in boys than in girls, and notably in early life, the age of 2 years showing the greatest number. Thirty per cent followed trauma, which however is only an incidence. Family tuberculosis occurred in at least 79 per cent; 11 per cent had other joints involved. As to pathology, the disease generally begins in the spongy epiphysis near the junction and generally in the region of the internal condyle, though Stiles states that the most common situation is in the diaphysis. Of the cases operated upon, practically all had bony involvement, and only about half, synovial disease. X-ray examination showed nearly always an epiphysitis, some atrophy, and loss of contour of articulating surfaces. The symptoms, in order of frequency, showed local swelling, especially at the internal condyle; limitation of motion; permanent flexion; local heat; painful motion; subluxation; and abscess. The limb is usually lengthened the first two years. A quarter of the cases showed abscesses.

The treatment was largely conservative, consisting in protecting the joint from motion and weight-bearing by casts, splints, and traction. Deformities were corrected under ether, manually, by genuclast, osteotomies, and tenotomies. When abscesses and sinuses persisted, erosion was done, followed if necessary by resection of the joint. The average

duration of treatment was 5 years, but operated cases averaged a year and a half longer. The results of treatment showed twice as many satisfactory as unsatisfactory cases; the non-operated group showed up better than the operated (however, the severer), while the very best results came from cases treated with splints and plaster casts.

ROBERT G. PACKARD.

Rogers, M. H.: Tuberculosis of the Knee-Joint in Adults; Prognosis and Treatment. *Am. J. Orth. Surg.*, 1915, xii, 589.

Rogers compares the end-results of conservative and operative treatment. The trend of 100 cases under conservative treatment was progressively bad, showing no record of a cured case, but coming within four years to excision or amputation. The operative treatment in a group of 47 cases included excisions, amputations, exploratory arthrotomies, drainage, and curettage. Excision always caused the active tuberculosis to become quiescent, and a favorable ankylosis was secured.

A group of 20 cases was carefully studied, the observations including a careful exploratory arthrotomy. These arthrotomies showed variously the successive changes: thickened capsule, pannus formation with eroded cartilage underneath, formation of adhesions, turbid gelatinous fluid, and rice bodies. The arthrotomy was done not unnecessarily, but because an exact diagnosis, prognosis, and treatment could not otherwise be determined, a pathological examination of a strip of the thickened capsule and a portion of the pannus will furnish conclusive evidence.

The conclusions are that conservative treatment is not satisfactory in adults, an exact diagnosis within the first year often being impossible without arthrotomy; and that excision is justifiable as early as diagnosis is made.

ROBERT G. PACKARD.

Cofield, R. B.: Syphilis of the Joints. *Lancet-Clin.*, 1915, cxiii, 346.

Until late years syphilitic arthritis has been considered a rarity due to the frequent absence of the ordinary symptom-complex, but now, with the aid of the Wassermann, it is claimed that 7 per cent of all arthritides in children is luetic. The congenital and acquired types are different.

The congenital type, first an epiphysitis, shows synovial effusion in the adjacent joint with painless and practically normal passive motion, a low intermittent fever (simulating the tubercular type), together with the luetic physiognomy, characteristic teeth and keratitis. The larger joints are mostly affected, often bilaterally, with little or no pain, but with a feeling of weakness due to joint distention and ligament relaxation. The X-ray shows osteochondritis or epiphysitis with periostitis and later a tendency to osteo-arthropathy.

The acquired types are four: (1) simple arthralgia, occurring especially in the secondary and tertiary stages, characterized by severe pain in one or more joints, notably in repose, but without objective

symptoms; (2) hydrarthrosis, usually in the larger joints, especially the knee, showing effusion, capsule thickening, overstretched ligaments, joint insecurity, mild fever, and vague pains in the limbs; (3) gummatous involvement with gross pathological changes in the tertiary stage, showing rounded or flattened bodies in the synovia or ligamentous attachments, changing later into ulceration, thickened capsule, the X-ray picture showing thickened soft parts, bony destruction, and enlarged contiguous bone, with a history of gradual onset, slight pain and fever, slight limitation to motion, and joint instability; (4) osteo-arthropathy or Charcot joint, with its effusion, relaxed ligaments, hypermobility, frequent subluxations, and rare pain. The X-ray is very valuable in diagnosis.

Differential diagnosis. Tuberculous joints do not react to antisyphilitic treatment, usually show more pain, a positive tuberculin reaction, and characteristic X-ray picture. Rickets show rachitic rosary, no involvement of the shaft, less painful epiphysis, and, rarely, joint effusion. Acute articular rheumatism shows high fever, diaphoresis, transient and migratory joint involvement, and history of tonsillitis. Hypertrophic and atrophic arthritis shows characteristic X-ray pictures. Gonorrhoeal arthritis shows high fever, more acute infection with pain and tenderness, and serologic test. Osteomyelitis does not show thickening and sclerosis of cortex. Osteosarcoma runs a rapid course and has not the multiplicity of lesions.

Treatment includes prophylaxis, antisyphilitic measures, supporting apparatus, and often drainage of broken-down joints.

ROBERT G. PACKARD.

O'Reilly, J. A.: Joint Syphilis in Children. *Am. J. Orth. Surg.*, 1915, xii, 683.

The author calls special attention to the frequency of joint syphilis in children. Nine to ten per cent of all cases examined at the Orthopedic Clinic of the Washington University Hospital had joint syphilis. Adults were more commonly affected than children. He has considered here the congenital type largely. The pathology and symptoms show symmetrical synovial effusion, little pain, but more severe at night, and interference with function. There is a thickening at the epiphyseal line, altering the joint and limiting the motion. A hyperplasia is often seen, but bone destruction which occurs in the gummatous stage is seen less frequently. A positive X-ray is less conclusive in joint syphilis than in a tubercular joint. The joints involved most frequently are in order: the hips, knee, ankle, spine, and elbow. The Wassermann is not always positive but fairly reliable. The differential diagnosis is made between tubercular joints, osteochondritis, infective and atrophic arthritis, and joint syphilis. The conclusions are that about one-half per cent of all joint conditions are syphilitic and that many joints treated for other diseases are syphilitic. He advises laboratory examination when the diagnosis is in doubt.

H. W. MALTBY.

Eikenbary, C. F.: A Hitherto Undescribed Dystrophy, Probably of Luetic Origin, Affecting Particularly the Joints of the Lower Extremity. *Am. J. Orth. Surg.*, 1915, xii, 689.

Eikenbary describes a dystrophy, occurring in three children of one family, affecting the joints of the lower extremities, particularly the knees and ankles. The children ranged in age from 6 to 19 years, and complained of deformity, swelling, and disability of the knees. The family history was negative, there being four other children, also. They all gave a history of "nursing sores," and "rheumatism," and slight trauma to the knee. Examination showed in all three children some lack of physical development, fissures about the mouth, a negative Wassermann, and one or both knees considerably deformed, swollen, boggy, without excess of fluid, with motion normal in flexion and extension, and with some abnormal lateral motion, accompanied by no pain. The X-ray findings were very important, showing dystrophic changes in the diaphyso-epiphyseal junction or in the epiphysis, irregular deposits, cortex thickening, and definite areas of bone atrophy and deformity in the femur, fibula, and patella.

Microscopic findings in one case in which operation was done to secure ankylosis, showed a characteristic picture of syphilitic osteochondritis. In differential diagnosis, tabes and Charcot joint were ruled out by negative neurological findings and a negative Wassermann; infection by absence of severe pain, no limitation of motion, and bony changes; syringomyelia by absence of sensory changes; while a diagnosis of late syphilis was suggested by lesions about the mouth, bowing of the tibia in one case, and the microscopic picture of a distorted line of ossification of cartilage. ROBERT G. PACKARD.

Toussaint, H.: The Treatment of Gangrenous Wounds by Free Incision. *Med. Press & Circ.*, 1915, cl, 366.

A case is reported of a soldier who was wounded two days before entrance to the hospital, an undetermined projectile having entered the middle third of the right arm. Primary hæmorrhage had been pretty free, but had been arrested by pressure applied by a comrade in the trench.

The aperture of entry, the size of a shilling, was situated just over the vasculovenous plexus; that of exit, situated in the same transverse plane, was as big as a crown-piece. The biceps muscle had been forced out, forming a hernial projection, and had a necrotic odor. Sensation and motion of the distal part of the limb were intact, but the limb as a whole was œdematous, though the fingers were not cold. In comparison with that on the left side, the radial pulse was barely perceptible. His general state was that of a profoundly infected anæmic subject, temperature 102.8° F., features drawn and anxious.

Four days later there was a secondary hæmorrhage. After freely opening up the aperture of entry, a pouch of imperfectly organized coagulated

fibrin, the size of a large fowl egg, was found. This was emptied thoroughly by digital curettage. The distal end of the brachial artery was cut right through and bared for an inch and a half. More than an inch of this ragged end was resected and a No. 2 silk ligature applied to healthy tissue. The brachial vein was split on one side, and was tied between two ligatures. The central end of the artery was exposed below the origin of the external collateral branch and was tied with a No. 2 silk.

On taking off the tourniquet, no oozing took place; the cavity was lightly packed with gauze, maintained in place with a pad of cotton-wool, the hand reposing on an inclined cushion.

After oscillating between 102.5° and 104° F, the temperature fell to 98.8° F. on the next day. The radial pulse could be felt, though feebler than on the other side. On the eighth day after operation he was able to get up, with his arm in a sling, and his ultimate recovery seemed certain, with integrity of function.

An infected wound by firearms, threatened with secondary hæmorrhage, calls for immediate preventive opening up. This is the only rational plan of treatment enabling us to afford security against hæmorrhage with a maximum prospect of ultimate recovery. EDWARD L. CORNELL.

Brickner, W. M.: Prevalent Fallacies Concerning Subacromial Bursitis; Its Pathogenesis and Rational Operative Treatment. *Am. J. M. Sc.*, 1915, cxlix, 351.

The author maintains that fallacies prevail largely in shoulder conditions, particularly in stiff and painful shoulder.

Thickened bursa walls cast no shadows, but calcareous deposits in and about the bursa cause shadows. The calcareous deposits are beneath the subacromial bursa and upon the supraspinatus tendon, occasionally near the insertion of the infraspinatus tendon. The deposit may be gritty and granular and the size of a small sesamoid bone, or of a fluid consistency which escapes upon incision through the bursa wall. The deposits occur singly and in multiple. Trauma in adults is the greatest etiological factor of these deposits, as shown by radiographs. In the cases of extratendinous deposits tears in the capsule were shown, granulation tissue forming later. The deltoid always shows swelling and a definite point of tenderness on pressure just over or above the lesser tuberosity; abduction and internal rotation are limited.

The history and careful comparative examination with a radiograph diagnosticates the condition. Acute conditions are relieved by early removal of the lime deposits, disturbing the sac as little as possible. Removal of any portion of the sac is advised against. An incision 2 to 3 inches long extending from the outer border of the acromion downward and outward toward the outer condyle through the deltoid exposes the sac. This sac is opened, and with a dull curette any lime deposits present are removed,

any adhesive bands present being severed and removed; next an incision is made through the floor of the sac and the entire bursa explored. The incisions are closed with catgut. The bursal sac is anointed with sterile vaseline on its inner surface on the theory that adhesions are thus prevented to a certain extent. The arm is put up in a plaster spica in strong abduction. A cure is usually effected in ten to sixty days. Pain is relieved only by removal of the lime deposits. H. W. MALTBY.

FRACTURES AND DISLOCATIONS

McGuire, F. W.: The Treatment of Compound Fractures. *Lancet-Clin.*, 1915, cxiii, 433.

The paper is a résumé of the present-day treatment of compound fractures in their various aspects. The author groups his cases into direct, indirect, amputations, gunshot, and compound fractures into joints.

The first principle in treating compound fractures is to convert them into simple fractures if possible. Control of hæmorrhage is the only circumstance which warrants enlarging or entering these wounds directly with the fingers or instruments. The wound and skin should be cleansed with a five per cent tincture of iodine and the blood-clot swabbed out with gauze saturated with the same solution. Plating or other bone operations are never done until the danger of infection has been eliminated and the wound perfectly healed. ROBERT B. COFIELD.

Marcy, W. H.: Some Medicolegal Features of Fractures. *Am. J. Surg.*, 1915, xxix, 121.

Marcy considers this subject from several points of view.

1. As to the physician, the law holds that he must exercise reasonable care and skill in the treatment of fractures. A radiograph should be taken to clear up the diagnosis and as a record. The author warns, however, against the misleading impression an X-ray may give, as a perfect functional recovery may show the bones more or less out of alignment or in a comminuted fracture about a joint, while the X-ray plate may show perfect position, but there may be a stiff joint.

2. Under the heading of susceptibility of the individual to fracture the author discusses the effect of age and various diseases, as syphilis, rickets, and others, as predisposing causes of fracture, and he emphasizes the care necessary on the part of the physician to keep these facts in mind.

3. In regard to litigation, the question of deciding whether a person has ever suffered a fracture in old cases, and the possibility of the position in which an X-ray is taken giving a false impression of deformity or injury, are discussed. Examples are given of possible false impressions given by X-ray of normal structures, special emphasis being laid on the spine, hip, and sacro-iliac joints.

FRANK D. DICKSON.

Grabowski, A.: Experience with Nail Extension (Erfahrungen mit Nagelextension). *Deutsche Ztschr. f. Chir.*, 1915, cxxiii, 529.

Steinmann's nail extension undoubtedly has some great advantages as compared with other methods of extension. As the force acts directly on the bone, much more powerful traction is exerted than with any other method; therefore the effect on the dislocation is unusually great. In extension with a plaster cast part of the traction is lost by friction on the soft parts. In nail extension less weight accomplishes the same purpose and the danger of overburdening the soft parts is avoided. Nail extension exercises continuous traction, which is important in overcoming the dislocation. The broken extremity is freely exposed; therefore it is much easier to watch it and institute motion and massage when necessary to prevent stiffness of joints and atrophy of soft parts from inaction. As the force acts on a circumscribed point, extension can be used in spite of injuries to the skin, such as wounds, eczema, and gangrene. In compound fractures especially it is possible to exercise traction without disturbing the wound.

The method, however, has certain disadvantages, such as danger of infection and pain, injury of the bone, especially of the epiphysis, joint disturbances, and delayed consolidation on account of too strong traction. The chief danger is the possibility of infection.

Steinmann himself reports very good results with nail extension, especially in old healed fractures with great shortening. He thinks the danger of infection is slight if careful asepsis is practiced. Anschütz also had excellent results. He believes that in compound fractures with great dislocation the prognosis is better than with any other method. He does not use nail extension in recent simple fractures for fear of transforming a simple into a compound fracture. Waegner also advocates Steinmann's method. He has used it in 26 cases with no infection. Heinemann had good anatomical and functional results in cases where the prognosis was very bad. He, too, thinks that because of the danger of infection the method should be used only when there are strict indications for it. Gerster values the method because of its simplicity, the constancy of the traction, and the possibility of beginning motion early. He thinks the danger of infection is slight. Bardenhauer and Graessner think that the method has all the dangers of an operation and should be used only when there are strict indications.

Körber, among 70 cases, had only 33 that recovered uneventfully; in 19 there was slight inflammatory reaction; in 12 suppuration in the nail wound, in 5 small abscesses and in one phlegmon; in one there was erysipelas, not originating in the nail wound. Schwarz examined the secretion bacteriologically in 6 cases and found staphylococci in 5 and streptococci in 1. He thinks it is not possible to keep the bone and soft parts aseptic throughout the treatment. He had one case of death from

nail extension, the only fatal case that has been reported. Magnus, among 11 cases of nail extension, had only 3 that were completely successful.

Riedl reports 40 cases, with good results in all. He thinks that especially in old and compound fractures it is an almost indispensable method for obtaining functional cure.

Grabowski reports 19 cases from the Bonn Surgical Clinic. In 10 of the cases the results were excellent, even brilliant, and these were particularly severe fractures. There was incomplete correction of the dislocation in 5 cases, delay in callous formation in 3, pain in 2, infection in 8; one of these cases was a severe osteomyelitis; the others were only slight infections. In 3 of the cases the result was excellent in spite of the infection. The longer the nail is left in position the greater the danger of infection. The average time the nail was left in position was three to three and one-half weeks. Nail extension is more dangerous in youthful patients, because of the danger of disease of the epiphysis.

The author's conclusions are as follows:

Nail extension offers great advantages over other methods, especially in compound and old fractures. It cannot be regarded as the method of choice because of the dangers attached to it; it should be regarded as a true operation and performed only when there are strict indications. It is reserved for cases where Bardenhauer's method has either been unsuccessful or would evidently be so. It is indicated in cases of advanced consolidation with vicious position of the fragments; in compound fractures, with great dislocation of the ends of the fragments and extensive injuries of the soft parts, and in any severe fractures near the ankle-joint where there is not sufficient surface for satisfactory plaster extension.

A. Goss.

Lane, W. A.: Results of Some Fracture Operations.

Am. J. Surg., 1915, xxix, 73.

The author reports the results of operations on nine cases of severe fracture or non-union of old fractures and shows the X-ray plates taken before and after operation. He says that failure in operations of this kind is due to a want of observation of the simplest rules by which asepsis can always be ensured; it also results from a deficient knowledge of the simplest mechanical principles and a want of skill and ingenuity; also, because of the employment of excessive force, immensely powerful traction on the fragments being a source of great danger. Skillful manipulation is easily the most effectual method by which accurate apposition can be ensured. Another source of failure is the use of ridiculously small plates. The largest and stoutest plates that circumstances permit should be employed.

LLOYD T. BROWN.

Young, J. K.: Fractures in the Neighborhood of Joints.

Am. J. Surg. 1915, xxix, 115.

Young considers these fractures under the following headings: (1) simple fractures; (2) compound

fractures; (3) comminuted fractures; and (4) fractures complicated with dislocations.

The importance of careful diagnosis confirmed by X-ray is emphasized in fractures about joints.

In simple fractures Young advises placing the joint in that position which allows of keeping the fragments in the best apposition. If ankylosis is feared, the joint should be dressed in that position which will give the best possible service. Large loose fragments should be removed. In compound fractures, especially when comminuted, careful dressing and proper fixation often prevent disastrous results. Young prefers Packard or Esmarch's bracketed wire splints for fixation in such cases.

In compound fractures of the astragalus excision often gives gratifying results. In fractures complicated with dislocation the author advises reduction under an anæsthetic as promptly as possible and fixation of the fragments by plates, screws, etc. Great attention should be given to preventing relaxation. Young believes that passive motion in joint fractures should not be used before three weeks, though change of position may be had from time to time. In operative procedures the strictest asepsis should be used, and if this is impossible no operation should be done.

FRANK D. DICKSON.

Breton, P. le: Arthritis of the Joints of the Hand Following Colles' Fracture.

Surg., Gynec. & Obst., 1915, xx, 450.

The author calls attention to a condition, not described in the literature, which sometimes follows Colles' fracture or other traumatic lesions of the upper extremity. From three to six weeks after the fracture, about the time for the removal of the splints, an inflammation of the joints of the hand and wrist sets in, accompanied by oedema, severe pain, and loss of motion. The inflammation increases gradually and comes to a climax in two to four weeks, then slowly subsides, leaving the hand weak, painful, and stiff. Later there is a marked atrophy of the tissues and the patient is unable to flex the fingers to the palm.

Of the 10 cases seen by the author, 4 recovered, 2 are convalescing, 3 were permanently crippled, and 1 died of cardiac complications. The patients were mostly females, over 40 years old, and most of them had some arteriosclerosis. The condition was not due to tight bandages, to improper reduction, or to ineffective treatment in any way. It seemed to be a traumatic arthritis of late development. The treatment advised was rest, baking, gentle massage, and passive motion.

Moorhead, J. J.: The Abduction Treatment of Fracture of the Clavicle.

Am. J. Surg., 1915, xxix, 120.

The vast majority of fractures of the clavicle make an excellent functional but a very poor anatomical recovery. This is due, first, to the resulting deformity, falling downward, inward, and forward of the outer fragment; second, to the inability to firmly hold the parts in place during the process of repair.

Moorhead accidentally discovered in treating a fracture of the humerus in right-angle abduction that a fracture of the clavicle had healed in almost perfect alignment. He now uses the abduction treatment in all cases where a minimum of deformity is desired. To apply the dressing the patient is seated and with the elbows flexed at right angles the arms are raised to the right angle position and as much beyond as is necessary to overcome the overlapping. In this position a plaster cast is applied to the affected shoulder only and left on three weeks; after its removal a sling is used for a week, after which no further support is necessary. The plaster over the fracture may be cut away to allow inspection if desired.

FRANK D. DICKSON.

Estes, W. L.: Fractures of the Femur. *Am. J. Surg.*, 1915, xxix, 103.

The author believes that a fracture of any part of the femur, except its neck, which cannot be reduced under anæsthesia and retained in position by some proper apparatus by the middle of the second week, should have the benefit of an open operation unless there is a contra-indication in the condition of the patient or some strong social or medicolegal consideration against it.

The treatment of fractures of the neck, upper, middle, and lower third of the femur are considered and discussed in detail.

ARTHUR J. DAVIDSON.

Pirring, J. E.: Fractures About the Ankle. *Am. J. Surg.*, 1915, xxix, 110.

Pirring advises careful investigation with the aid of the X-ray in all cases of ankle fracture. All cases should be examined and reduced under an anæsthetic. There is no routine appliance or splint recommended, nor is there a method of operation advocated to the exclusion of all others. What is absolutely required is that a careful study of each case be made under the guidance of the X-ray, and that reduction be made under anæsthesia. When this is done, the operator must decide for himself whether by an open operation or by manipulation he can best reduce and retain the parts in their former relations.

ARTHUR J. DAVIDSON.

Fee, F.: Old Dislocation of the Head of the Radius with Fracture of the Ulna Corrected by Lane Bone-Plate. *Lancet-Clin.*, 1915, cxiii, 435.

Fee calls attention to the difficulty of correct diagnosis in fractures and dislocations in the region of the elbow-joint and reports an interesting case. He first saw the case six months after the accident and found that the injuries consisted of a simple fracture of the right humerus at the junction of the upper and middle third, compound fracture of the inner condyle, simple fracture of the middle third of the radius with dislocation of its upper end backward, compound fracture of the right ulna at the junction of the upper with the middle third.

Operation, which included plating of the ulna, gave a good functional result.

ROBERT B. COFIELD.

Metcalf, C. R.: Separation of the Epiphysis of the Small Trochanter of the Femur; Two New Instances of a Rare Lesion. *J. Am. M. Ass.*, 1915, lxiv, 1234.

The author tabulates the reports in the literature and describes two new instances of this rare lesion. The separation or fracture may occur as the result of direct or indirect injury, but ordinarily it is due to the unexpected and violent contraction of the iliopsoas muscle.

Lacking radiographic assistance, the positive diagnostic evidence in this lesion is: localized pain and tenderness; inability to flex the thigh or, if it be present, Ludloff's sign; localized swelling or ecchymosis in the upper part of Scarpa's triangle.

The treatment consists of immobilization with the thigh flexed.

ROBERT B. COFIELD.

Ridlon, J.: Spontaneous Dislocation of the Hip. *Am. J. Orth. Surg.*, 1915, xii, 673.

The object of Ridlon's paper is to advocate the use of the term "spontaneous dislocation" for that of "congenital dislocation," which has been in general use up to this time, and a study of defective hips seems to warrant this change.

A congenital deformity is a "deformity produced or existing at birth." In these cases one might properly speak of congenitally defective acetabuli, for such is the fact in these cases, but as to the dislocation it may be quite different. The author says that it is quite likely that in some cases the head slips from the socket before birth, and that in some it is displaced at birth; but we know for a fact that all of these cases are born with defective sockets and loose capsules. We do not know just when most of them become displaced, but we do know that some of these cases do not become displaced until the child has walked for some time, that others remain in place until weight is carried with the limb adducted or hyperextended, and that still other defective hips are dislocated only when subjected to a considerable traumatism, and still others are never dislocated at all.

The author shows X-ray pictures of cases illustrating the above facts and concludes by saying that hips vary in all degrees, from those that were never in to those that cannot be dislocated without fracturing the acetabulum.

LLOYD T. BROWN.

SURGERY OF THE BONES, JOINTS, ETC.

Bartow, B.: The Further Application of the Intra-Articular Silk Ligament in the Flail-Joints of Poliomyelitis Paralysis. *Tr. Am. Orth. Ass.*, Detroit, 1915, May.

The author describes a method of limiting the motion in a flail-hip by means of heavy silk strands inserted through the acetabulum and the head of the femur. The No. 8 silk is drawn through a drill hole which passes through the lip of the acetabulum and the head of the femur and is tied over the capsule which is not incised. Motion in the hip is at once

restricted by the silk. The leg is immobilized in plaster for three months after which the patient is allowed to walk with crutches.

In children the cartilaginous structure of the parts impairs the result, but in one case, aged 7, there was limitation of motion after six months.

In genu recurvatum a No. 10 silk ligature is passed through the femur at the level of the condyles backward and downward and fastened into the tibia holding the leg in slight flexion. This position is maintained by plaster for three or four months.

For outward rotation of the thigh several strands of No. 4 silk are passed from the anterior superior spine of the ilium and fastened to the greater trochanter under the tensor femoris muscle with small intervening spaces. The silk strands thus resemble the ribs of an open fan, and serve to hold the leg in inward rotation.

W. A. CLARK.

Robertson, G.: The Result of Surgical Treatment of a Long-Standing Case of Congenital Equinovarus. *Brit. J. Surg.*, 1915, ii, 678.

The author pleads for operative interference in old neglected club-foot in adults. The particular operation cited was in a woman, 43 years of age, who had been compelled to give up her work on account of increased pain on walking. His incision began over the middle of the anterior aspect of the ankle-joint, passed downward and inward to a point a little in front of the tubercle of the scaphoid, then forward and slightly outward to the head of the first metatarsal bone, then across the dorsum of the foot to the head of the fifth metatarsal and finally backward to the cuboid on the external aspect of the foot. The skin-flap was reflected well backward. A bony wedge consisting of the head of the astragalus and the greater process of the os calcis was removed. The tendons of the tibialis anticus and of the extensor of the great toe were next divided close to their insertions and were then sutured respectively to the tendon of the peroneus tertius at its insertion and to the fifth metatarsal bone just posterior to the head. A good result was obtained and good function in six weeks. Three weeks later he decided to treat the other foot in a similar fashion, but sepsis resulted and complete removal of the astragalus was necessary, resulting in a weak ankle. Arthrodesis was later performed with such good function to the patient, associated as it was with a movable ankle on the other foot, that the author feels that an arthrodesed ankle on one side should be the operation of choice in these neglected cases of equinovarus.

M. S. HENDERSON.

Allen, H. R.: External Bone-Plating. *Lancet-Clin.*, 1915, cxiii, 430.

The author expresses his views as to the advantages of the external over the internal bone-plates and describes his method of applying external plating in fracture cases.

Bone pins are used which are capable of drilling their own holes through the bone and are provided

with handles which are a part of the drills themselves and which become the external plate. The handle of the pin is made of a low melting alloy which melts at 160°F., and when cool is sufficiently strong for all purposes. The author emphasizes the importance of so placing the pins that no two lie in the same plane. His results have been uniformly satisfactory.

ROBERT B. COFIELD.

Albee, F. H.: The Fundamental Principles Involved in the Use of the Bone-Graft in Surgery. *Am. J. M. Sc.*, 1915, cxlix, 313.

Duration of cellular life depends upon means of preservation of detached parts. Most favorable tissues for grafting are simple connective tissues, the autogenous grafts being most trustworthy. Bone-grafts with primary union and properly contacted in absence of infection are always successful as to viability and osteogenesis. Clinical success depends upon closely fitting and generously contacting all corresponding histological layers, minimizing trauma from tools and frictional heat, preserving graft and graft-bed from drying and possible infection, securing sufficient hæmostasis in the graft-bed, employing healthy vascular bone, and using the inlay principle.

The principle of Wolff's law causes the proliferation of the graft and the restoration of the resected bone, so that it is advisable to allow the graft to functionate early; this hastens the union of the bones, stimulating both the graft and the graft contact. The solid bony union in four weeks favors the graft in place of the metal internal splints. Dowel, inlay, or wedge bone-graft may be used. Preservation of graft is best accomplished by temporary immersion in normal salt, but vaseline and cold storage at 4° or 5° is better if any time has to elapse. Indications for bone-graft are numerous: to immobilize in tuberculosis; to repair fractured, infected, weakened, congenitally absent or defective tumorous, and deformed bones; to establish or fix joints; to close nerve foramina; and to repair defects in general.

ROBERT G. PACKARD.

ORTHOPEDICS IN GENERAL

Wilson, H. A.: The Status of the General Practitioner in the Prevention and Correction of Deformities. *Therap. Gaz.*, 1915, xxxix, 162.

In a well-written article the author considers many problems of interest as regards the coöperation of the specialist and the general practitioner. He has great faith in the general medical man who is away from centers of medical education, and has, in many instances, no advice and counsel upon deformities which he is required to treat. Many times he does treat them, not upon his own election, but because it is his only resort, and in that case he is only expected to give such skill as physicians in his own locality possess, and he believes great credit is due to those who do the best they can under difficult conditions.

In city life he finds three classes of practitioners:

1. The self-contained physician, who elects to be the medicine autocrat.
2. The distributor to the specialist.
3. The coöperator.

The self-contained physician does not avail himself of his many advantages, does not make careful diagnoses and has many failures, and it is this type of physician that makes specialization necessary.

The distributing practitioner is usually skillful in diagnosis, but has not confidence in his own therapeutic results, and so sends his patient to the specialist for treatment of some specific lesion.

The coöperating general practitioner is the best type of all. He studies his case carefully and co-operates with the specialist as to the treatment.

The author believes the family physician is the one to guide the patient, and believes that the specialist should not be the last resort, but should be called early, and with coöperation with the family physician the patient will receive the best possible result.

C. C. CHATTERTON.

Young, J. K.: A Case of Arrested Development of the Carpus and Tarsus. *Tr. Am. Orth. Ass.*, Detroit, 1915, May.

Young reported a unique case of deformity from the arrest of development of the carpus and tarsus. The child, a girl of 10, was normal at birth, but developed club-hand and club-foot from the first to the fourth year, during which time the centers of ossification, usually low down in the carpal and tarsal bones, were not deposited. The centers formed before and after this period are apparently normal. The arrest was probably due to some acute infection, general in character, but its exact nature is unknown.

Lovett, R. W.: The Superstition of Flat-Foot; the High Versus the Low Arch as a Cause of Painful Symptoms in the Foot. *J. Am. M. Ass.*, 1915, lxiv, 1208.

The author believes that boots are a predisposing cause of foot strain, not only by cramping the foot, but especially by failure to supply adequate support

to the sole of the foot; thus high arches are quite as liable to foot strain as low arches, if not more so. When foot strain occurs, it is desirable to rest the tired structures by support. Exercises in acute cases and the use of a flexible shoe generally do harm rather than good. He also believes that painful feet are more often helped by raising the heels than by lowering them.

ARTHUR J. DAVIDSON.

Owen, W. B.: Weak Foot, with Especial Reference to Treatment. *Lancet-Clin.*, 1915, cxiii, 388.

Weak foot is more prevalent today than it was several years ago because of "ultra-civilization." In certain races, for example the Indian, the feet appear flat yet they are not weak. This is due to their muscular development which is not impeded by footgear of the so-called civilized type. Prominent symptoms of the condition are pain, subsiding under rest, and limitation of motion, especially adduction. The pathology consists in relaxation of the plantar tissues, shortening of the tendo achillis, and in long standing cases changes in the articular facets, the unused portions becoming denuded of cartilage and new facets forming for the changed position of the bones.

The treatment varies with the type of deformity. A painful rigid abducted foot must be stretched forcibly into adduction under anæsthetic and held in plaster for two weeks. A whitman made over a model of the foot in normal attitude must then be worn for at least a year. A brace should not be considered as a corrective appliance, but only as a means of holding the foot after correction is effected. Shoes should be made to allow the foot to acquire a normal attitude and to restore proper body balance by throwing the weight to the outer border of the foot. Exercise of the feet is imperative in every case of weak foot regardless of degree. A weak foot which is not rigid can be cured by being strapped in adduction every five days, by the wearing of proper shoes, and by exercise. The weakened transverse arch known as Morton's toe may be relieved by a high arch and low heel; extreme cases require forcible flexion under anæsthetic.

W. A. CLARK.

SURGERY OF THE NERVOUS SYSTEM

Claude, H., Vigoroux, A., and Dumas, R.: Anatomical and Clinical Study of One Hundred Cases of Traumatic Lesions of the Nerves of the Limbs (*Étude anatomique, clinique et thérapeutique de cent cas de lésions traumatiques des nerfs des membres*). *Presse méd.*, 1915, xxiii, 65.

In the preparation of this report a neurologist, histologist, electrologist, and surgeon collaborated. They have treated more than 400 injuries of the nerves, and of this number have been able to follow up 42 cases of operation for injuries of the peripheral nerves for intervals varying from three to five months after operation. When there was merely

pain in the nerve, they injected into the nerve itself 2 or 3 ccm. of some weak anæsthetic or merely air. This distends and stretches the nerve and generally answers every purpose. If by the third month a paralyzed limb had regained some motor function they did not operate unless there were special circumstances calling for operation.

When an operation is considered necessary and the nerve is exposed, it sometimes seems entirely normal and can often be roused to normal functioning by injecting into the nerve-trunk 1 to 2 ccm. of a 1 per cent solution of methylene blue or by the injection of air. The latter is useful also as a pre-

liminary to operation on the nerve. Before attempting to operate they snip a minute particle from the nerve and examine it microscopically and also examine the nerve for the reaction of degeneration. They release the nerve from anything binding it down, but do not resect. Success was attained only in paralyzed arms; they have never had any success with the sciatic. A. Goss.

Neuhof, H.: Sequelæ of Minor Injuries Incompletely Severing Nerves of the Hand; Their Surgical Treatment. *Am. J. Surg.*, 1915, xxix, 143.

Neuhof has devoted considerable attention to the sequelæ of minor hand injuries in which the patient develops pain and skin tenderness, usually some time after the injury, and rarely directly after the trauma.

A diagnosis of hysteria has been made in these cases because this fact has not been recognized. These symptoms do not need to arise from major injuries but may follow traumata so insignificant that the patient recalls it with difficulty, or may result from scars or callous formation.

The author has had very good results in operating upon these cases by excising the scar tissue and in this way freeing the nerve. Occasionally excision of the involved portion of the nerve is necessary, with approximation of the ends. In one case in which there was an oedematous condition of the nerve the sheath was simply incised, which resulted in a diminution of its size. Usually after any work on these nerves they were covered with subcutaneous fat before the wound was sutured. These operations are simple. HENRY J. VAN DEN BERG.

SURGERY OF THE SKIN, FASCIA, AND APPENDAGES

Hazen, H. H.: Prickle-Cell and Basal-Cell Skin Cancers. *J. Am. M. Ass.*, 1915, lxiv, 958.

The main points of difference in the pathology and clinical history of the two types of skin cancer are presented as follows:

Precancerous lesions giving rise to the basal-cell form are: seborrhœic keratosis, sebaceous cysts, subepidermal nodules, various keratoses, and different overgrowths of connective tissue and epithelium. Those preceding the prickle-cell form are: X-ray keratoses, scars of granulating wounds, leg ulcers, wens, and other chronic dermatoses. Peterson believes the basal-cell type has a multicentric origin and the prickle-cell type a single point of origin.

Basal-cell growths are formed most frequently on the face near the eyelids, neck, and scalp; rarely on the mucous membranes and limbs. On the other hand, prickle-cell growths are most common on the mucous membranes and the extremities.

Both types start as cutaneous nodules, breaking down early into ulcers. The prickle-cell type grows more rapidly and is indurated deeper, while the surface is verrucose. In the basal-cell type the surface is smooth, the edges are rolled, and frequently pearly nodules and areas of spontaneously healed skin are found. Both types invade bone and periosteum.

Basal-cell cancers, *per se*, never metastasize, but

they may change to prickle-cell cancers, which nearly always have metastases in the regional lymphatics.

On gross section a prickle-cell cancer shows: (1) a rough surface, (2) deep infiltration, and (3) white radiating threadlike alveoli. In the basal-cell type the obverse is found. On microscopic section, in the prickle-cell type the alveoli are large with a tendency to whorl formation, resulting in epithelial pearls. In the basal-cell section the alveoli are small with no whorls present.

Early differentiation is impossible except by location. Tumors of the upper trunk are usually of the basal-cell type, while those of the lower part are of the prickle-cell type.

Difference in growth, surface appearance, and depth of induration, together with the appearance of small pearly nodules and spontaneous healed areas, will serve to diagnosticate the type of tumor.

Basal-cell tumors last for years and kill only when they erode a large vessel or enter the meninges. Prickle-cell tumors kill directly through their metastases. The author recommends and insists on total wide excision, first, last, and all the time, X-rays and radium being reserved for the inoperable case. In prickle-cell carcinomata the ideal operation is a "block" one; otherwise the glands are removed separately. PHILLIPS M. CHASE.

MISCELLANEOUS

CLINICAL ENTITIES — TUMORS, ULCERS, ABSCESES, ETC.

Phillips, J.: The Presence of Continued High Temperature in Malignant Tumors. *Am. J. M. Sc.*, 1915, cxlix, 193.

Phillips thinks that not enough importance has been attached to the symptom of continued high

fever in malignant tumors; that the high elevations of fever do occur in a considerable number of cases has been noted and reported by various authors. He reports a typical example of continued high temperature in adenocarcinoma of the kidney, with a review of the literature.

Wunderlich in 1870 stated that temperature elevations in cancer were comparatively rare, al-

though they sometimes did exist. He pointed out that intermittent fever was occasionally noticed in the early stages of cancer, and that its presence suggested a rapidly fatal course. Kuhn in 1875 reported a case of primary carcinoma of the kidney, accompanied by fever, in a child; but unfortunately these febrile periods were associated with hæmaturia, gastric disturbances, and softening of the tumor, which might easily have accounted for the elevations of temperature.

Brinton is quoted as having stated that fever is not rare as a symptom of malignant disease, whereas Riegel attributes the fever to the complications that occur during the course of the cancer. Additional reports of the association of fever with malignancy have been made by Liechenstern, Osler, Ralleston, Russel, Finlayson, Hampil, Hawthorne, Freudweiler, and others.

Freudweiler has made the most complete study, and after reviewing the literature he was able to systematically study 475 cases. According to the temperature he made the following classification: (1) febris continua; (2) febris intermittens et remittens; (3) malaria paroxysms; (4) isolated or short periods of elevation, of not less than three days' duration.

Of these 475 cases reported by him, 189, or 39.8 per cent had fever. As to the cause of the fever Phillips claims that with our present knowledge of bacteriology, infection can be excluded in a large per cent of these cases. It is not necessary to have ulceration, and infection may exist without tissue changes. He thinks that in many of these cases the condition is analogous to the fever we so often see in Hodgkin's disease. Hampil thinks the fever due to two causes: from the growth itself, and from the growth plus malaria. Phillips thinks, although no such substances have been isolated, nor has their presence been demonstrated, that because of the constant degeneration of tumor tissue, products of autolysis are formed which enter the circulation in small quantities, producing systemic disturbances, as fever.

The case he reports was in a male, aged 44, admitted to the Lakeside Hospital, April 19, 1911. One sister had died of cancer; otherwise the family history was unimportant. He complained of pain in the left side of the abdomen during the preceding four months. These attacks of pain were paroxysmal, and were sharp in character and would quickly disappear. Two days before admittance he noticed a prominent mass in his left side, just below the ribs. There was no cachexia, no loss of weight, but there was a large bulging in the upper part of the left side of the abdomen, which was elastic, freely movable, and descending on respiration. This mass extended anteriorly to almost the median line and posteriorly well toward the flank.

Ureteral catheterization revealed nothing abnormal. A carbohydrate test meal, amount obtained after one hour, was 180 ccm., Hcl free 30, total acidity 50, no lactic acid, and the benzedine

test negative. Nothing was obtained from the blood picture, and repeated examinations revealed no malaria.

The patient was operated upon by Crile, May 5. An incision was made on the outer border of the left rectus, and a large cyst was brought into view and aspirated, 6 liters of a thin dark liquid being removed. The exact origin of the cyst could not be determined, so its walls were sutured to the peritoneum and fascia and drained. A microscopic examination of sections obtained from the cyst walls showed no malignancy. No pancreatic ferments were found in the fluid aspirated. The recovery from this operation was uneventful, and the patient remained in good health for the following 18 months. Because of pain, loss of weight, and the size of the mass, he was again operated on by Crile in November, 1912. At this operation only a portion of the old scar was removed; nothing else was attempted, as the condition was thought inoperable. He was removed home in four weeks, and up to that time his temperature had not been above 99.5°. But beginning the last day of December he began to have chilly sensations, followed by a rise in temperature, and this condition continued until his death, May 18, 1913. During the first month the maximum temperature was 101°, the second month 102°, and the third and fourth month 103 to 103.6°.

From the physical examination no cause could be given for the temperature; at no time was there more than a moderate leukocytosis, and the blood cultures and malarial examination were negative. The findings at autopsy are reported in full. The anatomical diagnosis was papillary adenocystoma and adenocarcinoma of the left kidney and secondary adenocarcinoma of the liver.

The original tumor was undoubtedly a cyst of the kidney, and at that time was very probably benign, and later developed into a papillomatous cystadenoma, a tumor with the potentialities of invasion and malignancy. This in turn was transformed into a typical adenocarcinoma, and with this transformation the tumor became definitely malignant and spread by direct invasion to the surrounding tissues, having the properties of metastases.

L. B. CRAWFORD.

Weil, R.: Chemotherapy and Tumors. *J. Am. M. Ass.*, 1915, lxiv, 1283.

Weil gives a critical review of the application of chemotherapy in the treatment of malignant tumors. This treatment is based on experimental work on mice, first done by Wassermann and his co-workers in 1911, on the principle that treatment of cancer could be effective only by instituting constitutional treatment. Most insistent claims have been made in connection with the colloidal solutions of certain metalloids and metals, notably selenium, vanadium, and copper. It was found that the tumor failed to be influenced unless the dose given fell very little short of the fatal amount. Certain

experimenters have noted that smaller doses actually stimulated the growth of the tumor. Moreover a cure was accomplished in only 3 to 8 per cent of the animals in all the cases reported. This is a point of great importance, inasmuch as it furnishes an indication of its highly dangerous character from the standpoint of treatment. For obvious reasons transplanted tumors are at a certain disadvantage as compared with normal tissues of the body, their blood supply is impoverished and imperfect, and they have a natural tendency to undergo necrosis and in many cases spontaneous retrogression.

In carrying out this treatment in human beings marked improvements have been reported; there has been reduction in the size of the tumor, but not a single authentic cure. HENRY J. VAN DEN BERG.

Gaylord, H. R.: Etiology of Cancer in the Light of Recent Cancer Research. *J. Am. M. Ass.*, 1915, liv, 968.

The author endeavors to appraise the value of certain new discoveries in cancer research, chiefly in the light of experiments on animals.

The first to be discussed is the parasitic theory, which is considered justifiable on account of the discovery by Rous of filterable viruses causing different types of sarcoma in chickens. Versé states that the agent which endows the normal cell with malignant characteristics is usually a biochemical agent acting from without the cell.

All the predisposing lesions of cancer may be grouped under the head of chronic irritations. Von Brun demonstrated this in all but 48 out of 368 cases of superficial skin cancer. Maud Slye has also shown that there is an inherited predisposition to development of cancer in mice. This could very well account for the vagaries of cancer in human beings.

Through the thorough work of Rous in demonstrating the specificity of the filterable viruses in chicken sarcoma by causing only one form of growth, the theory must be accepted that there is a specific form of virus for every form of malignancy, and it is on this basis that future classifications of cancer will be made.

The existence of an immunity to transplanted cancer was shown by Clowes, Baeslack, and the author through the fact that mice recovering from cancer could not be reinoculated with the same tumor for some time thereafter; also that the blood of these mice would destroy the viability of cancer-cells. Crile and Beebe showed in dogs that the blood of a recovered case would cause a regression in an active case. Basliford agrees with this proposition. It has been found by numerous observers that this immunity does not begin until some time after birth. The question of whether the immunity against cancer is a tissue immunity or an immunity against an agent is further discussed, and two cases of human sarcoma are cited by the author in which the process was very favorably influenced by the injection of dried powdered

rat sarcoma. This is supported by Königsfeld, who obtained similar results in mice, and concludes that the protection thus obtained is specific and due to the development of genuine antibodies.

It was further observed by Bridré, Woglom, and Braunstein that the spleen and lymphatic system are the immunizing agents in practically all cases. Mice, otherwise resistant, after splenectomy, are very susceptible to cancer inoculations. Thus, any agent that injures the lymphatic system would tend to produce exacerbations in the growth. It has further been shown by various observers that the blood-cells are capable of absorbing a certain amount of radio-activity from the X-rays and radium. This would tend to a destruction of the lymphatic system, and thus may be explained those cases in which, after X-ray or radium treatment, there is a marked stimulation of growth and rapid fatal termination.

It has also been noted by the author that prolonged anaesthesia by ether or chloroform expedites the growth of implanted cancer in mice. This may have a bearing on those cases in humans that are promptly made worse by surgical interference.

The author next discusses the mechanism of metastases formation. It is known that cancer-cells, early in the disease, are found in the blood stream but do not form metastases. This is due to an immunity exerting itself through the blood, and when later in the disease this immunity fails, it is then that metastases form. This is true in the human, and is borne out in animals by the fact that in the case of mice a second inoculation very frequently fails to grow. There is probably a tissue immunity against the cancer-cell, and the theory is that the body can develop a tissue immunity as well as a specific immunity.

In closing, the author considers the question of inclusions in cancer. He asserts that they may be considered as similar to the inclusions in smallpox, trachoma, hydrophobia, etc., and that the whole lot will come under the head of filterable viruses. Marchand and Noguchi believe likewise, the latter having but recently cultivated the virus of hydrophobia. PHILLIPS M. CHASE.

Chiari, O.: Prognosis and Treatment of Tetanus (Beitrag zur Prognose und Therapie des Wundstarrkrampfes). *Wien. klin. Wchnschr.*, 1915, xxviii, 61.

The author reports a series of 10 cases of tetanus, 4 of which were severe, 3 moderately severe, and the remainder mild. The incubation periods in the 4 severe cases were 15, 12, 8, and 8 days, and in the moderately severe 7, 20, and 18 days, respectively. In the majority of the cases the patients had fully developed tetanus symptoms before entering the clinic. The treatment in all cases was the same. Locally nothing definite was done except to dress the wound. The actual treatment consisted in placing the patients in a darkened room kept absolutely quiet and in administering tetanus an-

titoxin intraspinally. After withdrawing a quantity of liquor sufficient to correspond with the quantity of serum to be injected, 60 to 100 antitoxin units were given intraspinally and repeated every other day. On the other days the same quantity was administered subcutaneously. In exceptional cases 200 to 400 units were given intraspinally and the same quantity subcutaneously; in addition 4 to 6 gm. chloral hydrate was given per rectum daily and occasionally small doses of morphine.

With this treatment 9 of the 10 cases were cured, with a mortality of 10 per cent. Good results with serum therapy, especially in large doses and given intraspinally, have been lately reported by Kreuter, Hochhaus, and others. Time alone will prove whether the spinal method of administering large doses of antitoxin will not receive the general recognition which has been denied it as the result of numerous ill-fated experiences. L. A. JUHNKE.

Howitt, H. O., and Jones, D. H.: Subcutaneous Injection of Oxygen as a Treatment for Tetanus. *Canad. Pract. & Rev.*, 1915, xl, 165.

The authors experimented on guinea pigs, the results obtained being as follows:

Tetanic symptoms were first observed after 44 hours; convulsions and death after 84 hours.

In one pair, where one-half drop of an 8-day culture was used for inoculation, tetanus developed and terminated fatally in the case of the control, but had not developed where oxygen was injected eighteen days later. In a second pair, where the amount inoculated was double that used in the first pair, tetanus developed with fatal termination in both cases, but the appearance of tetanic symptoms and subsequent death were considerably deferred by the one injection of oxygen.

To inoculate, a puncture was made through the skin with a sterile sharp instrument, then a platinum needle was drawn through the surface growth of the culture and inserted into the wound.

In a second series, practically the same results were obtained. EDWARD L. CORNELL.

Secord, E. R.: The Treatment of Acute Surgical Infections. *N. Y. M. J.*, 1915, ci, 841.

Nine cases are reported, including cellulitis of the arm, gangrenous appendix, crushed hand with infection, streptococcal gangrenous finger, puerperal sepsis, and virulent orchitis.

In all but two cases the following technique was used: The first dose of mixed infection vaccine in adults was 2 ccm. and was invariably given by deep intramuscular injection, either in the gluteal region or in the muscles of the loin. This was followed in 24 hours by an intravenous injection of 0.5 ccm. The second and third injections were only given in 24-hour periods intravenously, increasing the dose by 0.5 ccm. each time. If improvement was not as rapid as desired, the fourth intravenous dose was given on the succeeding day, otherwise it was occasionally left until the fifth or sixth day.

Where the technique was followed, there was usually very little, if any, reaction from the first or subcutaneous dose. After the intravenous dose, a distinct chill was usually observed in about 20 minutes or an hour, the temperature elevated one or two degrees above what it had been, there was some nausea and frequently headache. These unpleasant symptoms usually passed off completely in an hour or so and the next morning the temperature was generally decidedly lower than it was before the injection was given.

The intravenous injection should never be used except after a preliminary subcutaneous injection; the vaccine should always be diluted with saline, and the fluid should always be injected very slowly.

The author is of the opinion that the stock preparations of mixed infection vaccine are powerful remedies for stimulating the power of resistance of patients who are seriously ill from that group of conditions which, for lack of a better name, we may call the surgical infections.

The use of the remedy should not be delayed until the patient is moribund. EDWARD L. CORNELL.

SERA, VACCINES, AND FERMENTS

Bronfenbrenner, J.: The Mechanism of the Abderhalden Reaction; Studies on Immunity. *J. Exp. Med.*, 1915, xxi, 221.

The specificity of the Abderhalden test has been established by a large number of investigators who, in compliance with Abderhalden's request, worked at the test until they succeeded in obtaining the desired results. On the other hand, many other investigators have, on the basis of their experiments, questioned the specificity of the test. From the beginning Abderhalden and his pupils claimed that faults of technique were responsible for the failure to obtain satisfactory results, but the work of many investigators has shown that the reaction is no more difficult to handle than other serological tests, and that, therefore, the explanation of the differences of the results must be looked for in other directions.

Before entering upon the specific problem under investigation the author repeated some of the fundamental experiments. First, he attempted to establish by experiment the specificity of the Abderhalden test in general. For this purpose two sets of experiments were undertaken, one with human sera, mainly from cases of pregnancy, in which the specific ferments of Abderhalden were supplied by patients' sera; the other with animal sera, in which the specific ferments were produced experimentally previous to the actual test. His results with the Abderhalden test were strictly specific, like those reported by many other workers. He adhered closely in all details to the technique described by Abderhalden, with a few modifications suggested in the current literature of the subject, which he adopted after many preliminary experiments.

The results of his work may best be summarized as follows:

1. The Abderhalden reaction is specific.
2. The properties of serum on which it depends develop in experimental animals simultaneously with antibodies during the process of immunization.
3. It is impossible to observe by direct methods the presence of digesting ferments in the blood of immune animals.
4. The Abderhalden test may be resolved into two phases. A dialyzable substance appears in the second phase and is the result of the autodigestion of serum.
5. The autodigestion of serum in the Abderhalden test is due to the removal of antitrypsin from the serum by the sensitized substratum.

GEORGE E. BEILBY.

Jobling, J. W., Eggstein, A. A., and Petersen, W.: Serum Proteases and the Mechanism of the Abderhalden Reaction; Studies on Ferment Action. *J. Exp. Med.*, 1915, xxi, 239.

Since the Abderhalden method of dialysis has been available for clinical purposes numerous reports of results have been published, some of which have tended to discredit the specificity of the reaction and so reflect upon its usefulness as a clinical method. The conflicting results have cast considerable doubt upon the mechanism of the reaction as first advanced by Abderhalden.

It seemed unfortunate to the authors that in the enthusiasm of the search for specific ferments the proteases which might normally be present in serum, and which had previously received some attention, had been neglected. They were inclined to believe that in the study of these non-specific proteases considerable information might become available which would aid in the elucidation of the points at issue in the Abderhalden reaction. They have, therefore, undertaken a large number of experiments, the results of which they report in this present study.

In view of this experimental data, together with that given in their previous papers, the authors are inclined to believe that the Abderhalden dialysis method, and the theory underlying it in so far as it is applicable to protease action, is without warrant of specificity, and probably depends upon purely fortuitous mechanical factors. It seemed to them probable that in various pathological conditions proteases normally confined to the leucocytes in the human being appear in the blood where their presence can be demonstrated by a method which removes the antiferment without injuring the ferment. The proteases are not specific they think, the placental tissue being found most efficacious, possibly because of purely mechanical factors (surface exposure), as is indicated by the wide range of clinical conditions in which the placental substrate gives positive results.

From their experiments the authors draw the following conclusions:

1. Normal serum protease is not specific; it is active in both dilute acid and alkaline media. It is

destroyed by heating to 70° C. for thirty minutes. It is markedly impaired when heated at 56° C. for thirty minutes. It is inhibited by the unsaturated soaps and lipoids.

2. Guinea-pig and rabbit sera contain relatively much protease; the leucocytes are without proteolytic ferments.

3. Normal human and dog sera contain little or no protease; the leucocytes are strongly proteolytic.

4. Serum complement and protease are not identical.

5. During various pathological conditions the non-specific protease is increased in both human and dog sera.

6. An increase in antiferment is in many instances coincident.

7. During the Abderhalden reaction the placental tissue becomes more resistant to enzyme action because of the absorption of the antiferment from the serum.

8. The dialyzed serum loses antiferment because of absorption by the placental tissue or by other absorbing substances, including probably the dialyzing membrane.

9. The digestive substrate is the serum protein made available for protease action by the absorption of the antiferment.

10. The proteases in pathological conditions investigated by the authors (pregnancy, tuberculosis, and pneumonia) are non-specific.

GEORGE E. BEILBY.

Ebeler, F., and Löhnberg, E.: Further Experience with the Abderhalden Ferment Reaction (Weitere Erfahrungen mit der Abderhaldenschen Fermentreaktion). *Berl. klin. Wchnschr.*, 1915, lii, 319.

The authors previously reported 100 cases of the Abderhalden reaction in pregnant and non-pregnant women. In the pregnant cases there was only 1.92 per cent of errors, while in the non-pregnant cases there was 12.5 per cent. Since that time they have been devoting themselves to making improvements in the technique, and they now report a series of 160 cases, including 50 cases of normal and pathological pregnancy in all the different months, and 110 normal and pathological non-pregnant cases in men and women. The percentages are not much improved over their former results.

Among 12 normal cases placenta was not catabolized in any. In 11 cases of extra-uterine pregnancy confirmed by laparotomy, 6 reacted positively and 5 negatively. To be sure some of the latter were old cases in which pregnancy could no longer be demonstrated microscopically, but one was a freshly ruptured pregnancy in the fourth month. The authors conclude that the reaction is very unreliable in extra-uterine pregnancy.

In the 39 cases of normal pregnancy the reaction was negative only once, and this case was complicated by chronic nephritis and severe changes in

the circulatory system. With such severe disturbances in metabolism the case can hardly be called a failure, and even if it is so counted it only makes 2.56 per cent wrong diagnoses in this group of cases. The results were much worse in the 61 non-pregnant cases examined for various gynecological diseases. The results were positive with placenta in 12 cases, or 19.6 per cent. The 12 cases included 1 of acute pancreatitis, 1 of sepsis, 1 of Douglas' abscess, 4 tumors of the adnexa, 3 ovarian cysts, 1 hæmatoma in fracture of the malleolus, and 1 case of syphilis in which the Wassermann was positive.

A series of cases of carcinoma was examined with carcinoma tissue as a substrate and some with kidney substance also. Among 28 cases 82.14 per cent were positive. A small group of cases was examined after radium treatment and there was a decrease in the positive reactions. If this is confirmed by further work, it may become possible to use the reaction to judge the effect of radium treatment. Tables are given showing the results in the various groups of cases.

The authors conclude that the Abderhalden test in pregnancy and carcinoma is not absolutely reliable, but gives tolerably good results. Improvements may be made in the technique that will make it more reliable, but such improvements will make it even more complicated and difficult to carry out in practice. Whether it will ever be adapted for ordinary practice remains to be seen. A. Goss.

Wohl, M. G.: Serodiagnosis of Rabies; Preliminary Report. *Am. J. M. Sc.*, 1915, cxlix, 427.

Wohl conducted experiments based on the principles of the Abderhalden serodiagnosis of pregnancy applied to rabies. He argued that as long as the causative agent of the disease is present there will be a metabolic disturbance of the cells with which the virus comes into contact; against these products protective ferments would be formed, and to detect these ferments was the object of the study.

From the results obtained he believes the Abderhalden reaction might be used for diagnostic purposes in rabies, and that the reaction is positive as early as the third day in rabbits subdurally inoculated with fixed virus, thus making the diagnosis much earlier by this method than by any other now in use. D. L. DESPARD.

Harmer, T. W.: A Study of the Efficiency of Mixed Toxins (Coley) in Inoperable Sarcoma. *Boston M. & S. J.*, 1915, clxxii, 331, 373, 411, 440.

In 1914 Harmer published an analysis of 91 cases personally treated with mixed toxins, to which he now adds cases personally treated since that date; he has also collected from the literature 188 cases treated by other observers. In a study of these cases the data recorded have been name or number of patient, age, sex, occupation, clinical diagnosis, duration of disease before operation, or before toxin treatment, history of trauma or irritation, nature of

operation, interval between operation and toxins, size of growth before operation, size of growth when toxins started, site of injections, pathological diagnosis, tissue of origin, duration of treatment, maximum dose, character of reactions, effect of toxins on size and consistency of the growth and on pain, remarks of interest, and end-result.

Of the whole series 134 cases have been chosen as suitable for analysis. All of these cases have been proven by microscopical examination. All were primary or recurrent inoperable sarcoma, or cases in which the disease could not be eradicated by operation. All had been under treatment at least three weeks. All were free from concurrent treatment (X-ray, radium, arsenical preparations, etc.).

The 134 cases which have conformed to these criteria have been analyzed: (1) according to the type of the sarcoma, and (2) according to the anatomical situation and the tissue of origin. In these analyses the cases have been arranged in six groups, determined by the effect of the toxins.

Group A includes those cases in which there was no appreciable effect.

Group B includes those cases in which the growths softened but did not appreciably diminish in size.

Group C includes those cases in which the growths disappeared or practically disappeared but returned.

Group D includes those cases in which growths disappeared but metastases simultaneously occurred.

Group E includes those cases in which growths diminished in size but still persisted.

Group F includes those cases which are apparently cured, in which the growths have disappeared and no metastases have occurred. There are 73 such cases.

After a careful, painstaking, and apparently unbiased consideration, Harmer concludes as follows:

1. Mixed toxins of streptococcus and bacillus prodigiosus (Coley) are of value in certain cases of inoperable sarcoma.

2. The treatment of primary or recurrent inoperable sarcoma with mixed toxins must be intensive. The increment of dose and the interval between injections requires some experience. This method of treatment is distressing and is never certain. This analysis has been undertaken, therefore, in the hope of ascertaining the types of cases which offer reasonable expectation of benefit.

3. The institution of this treatment is unjustifiable in cases in which operative measures of reasonable safety offer possible hope of recovery. A frank statement of the nature and the severity of reactions and the probability of benefit should be made to the patient or some responsible person before the treatment is undertaken.

4. Seventy-three cases have been regarded as apparent cures.

5. The small round-cell type apparently offers the greatest expectation of benefit, followed closely by

the spindle-cell type. Only a relatively small number of the mixed-cell type have been benefited. The use of toxins with multiple melanotic growths does not seem justifiable, but their use in single melanotic growths is legitimate.

6. Regarding the tissue of origin, the greatest number of apparent cures have occurred in bone sarcomata (exclusive of giant-cell cases), over 18 per cent of the total number of apparent cures, with an equal division of round-cell and spindle-cell types.

7. Giant-cell cases furnish about 15 per cent of the total number of apparent cures. The records seem to justify preliminary trial of toxins in carefully chosen cases in which slowly growing tumors have ruptured more or less extensively into the soft parts rather than immediate amputation. With skillful judgment a few limbs have apparently been saved. If such treatment is practiced, the patient should understand that amputation may ultimately be necessary, and it should not be long deferred in the advent of increased rapidity of growth, repeated hæmorrhages, considerable absorption, or superimposed infection.

A small group on account of anatomical situation, viz., extensive involvement of the vertebrae, defy surgical eradication. These, the author believes, should be submitted primarily to surgical attack, followed immediately by toxin treatment. The records justify this practice.

8. Primary inoperable round-cell sarcomata, arising from fascia and muscle, which have been apparently cured, have been situated in the lower extremity, abdominal wall, and back. They compose about 16 per cent of the total number of apparent cures. Nine of twelve are of the spindle-cell type.

9. Sarcomata of the cervical glands compose about 10 per cent of the apparent cures.

10. In a small number of cases the toxins produce striking relief from pain.

There follow 134 case reports, arranged in groups according to anatomical situation or tissue of origin of the growths.

Fitch, C. P.: A Review of the Principal Methods Used to Standardize Bacterins (Bacterial Vaccines), with Special Reference to the Use of the Hæmocytometer. *J. Am. M. Ass.*, 1915, lxiv, 893.

The author discusses five methods of standardizing bacterial vaccines and makes a summary of the relative advantages and disadvantages of each. The use of bacterins in the treatment and prevention of disease has steadily increased since their introduction by Wright in 1902. While some men claim that an exact count of the dead bacteria injected is not necessary, those who are familiar with the use of bacterins know that often their injection is followed by unexpected results due to the toxicity of the bacterin, the idiosyncrasy of the patient, or too large a dose. It is true that probably no method

gives the exact number of bacteria, yet certain procedures lead to more accurate results than others.

1. Wright's method, which he originated in 1902, consists essentially of making relative counts of bacteria and red blood-cells in stained films, made by mixing measured amounts of normal human blood and the bacterial suspension. Allen modified this method by the use of two or three volumes of a 2 per cent sodium-citrate solution. If in counting a certain number of fields the bacteria are twice as numerous as the red blood-cells the bacterial suspension is assumed to contain 10,000,000,000 bacteria per cubic centimeter. This method presupposes the red blood-cells to be fairly uniform in number. Furthermore, it is found very difficult to get films of the blood suspension that are uniform.

2. The nephelometer method, which was devised by McFarland, consists essentially of a series of ten standardizing tubes containing a precipitate of barium sulphate. The first tube has 99 per cent of a 1 per cent solution of chemically pure sulphuric acid and 1 per cent of a 1 per cent solution of chemically pure barium chloride; the second 98 per cent of sulphuric acid and 2 per cent of barium chloride, and so on, these tubes being called 1, 2, 3, etc.

On using this instrument the standard tube appropriate to the experiment is selected, shaken well, and stood up in the holder. Alongside with this is a tube of sterile salt solution into which the surface bacterial growth is transferred and mixed uniformly until both tubes have the same relative opacity. This method is merely a guess, as other factors than bacterial content affect the density of the solution.

3. The weight method devised by Wilson and Dickson consists in weighing a piece of thin platinum foil, 1.5 inches by 1 inch, and a small dry test-tube. The surface bacterial growth is placed on the foil, placed in the tube, and put in a desiccating chamber. After thorough drying it is weighed again and by subtraction the weight of the bacteria is given at once. The following table gives the number of bacteria to the milligram of dried bacteria:

Staphylococcus.....	3,000,000,000
Streptococcus.....	3,400,000,000
Gonococcus.....	4,500,000,000
Meningococcus.....	3,000,000,000
Bacillus coli.....	6,400,000,000
Bacillus typhosus.....	8,000,000,000
Bacillus pyocyaneus.....	3,400,000,000
Bacillus of Friedlander.....	4,300,000,000
M. melitensis.....	14,000,000,000

The foil is then spread out in a sterile dish and five minutes' time given to emulsifying the organisms with sodium chloride. The method is objectionable because of common lack of the necessary apparatus.

4. The plate-culture method implies the standardization of bacterial suspensions by agar-plate cultures. Filtered bacterial suspensions are diluted with sterile salt solution to 1:100, 1:1,000, 1:1,000,000, and 1:100,000,000. These solutions are plated

out and incubated for forty-eight to seventy-two hours and the colonies counted.

This method is long and cumbersome; some of the colonies may come from more than one bacterium, especially in diplococci, or some of the bacteria may be dead and the number of colonies be less than the number of bacteria in the suspension.

5. The gravimetric method, a procedure employed by Hopkins, consists of filtering the bacterial suspension into a centrifuge tube, the end of which is drawn out into a small tip, graduated to hundredths of a cubic centimeter; centrifugalizing on a machine with an 18-cm. head at 2,800 revolutions per minute for one-half hour. The salt solution and bacteria above the 0.05 mark are removed and 5 ccm. of saline solution added and the sediment resuspended. This 1 per cent suspension is killed in the usual manner, and as Hopkins has determined will have the following proportions:

	Per cent.	Billion per ccm.
Staphylococcus aureus and albus.....	1	10
Streptococcus hæmolyticus.....	1	8
Gonococcus.....	1	8
Pneumococcus.....	1	2.5
Bacillus typhosus.....	1	8
Bacillus coli.....	1	4

This method, as its author states, gives but approximate results.

6. The hæmocytometer method was first used by Mallory and Wright. They employ a counting chamber used for counting blood-platelets by the Helber method. This is like the Thoma-Zeiss chamber in every way except it is 0.02 mm. deep and the Thoma-Zeiss is 0.1 mm. deep. For counting a 1:200 dilution of bacteria is made with the aid of the red-blood-corpuscle pipette. The average number of bacteria per small square times 4,000 million will be the number of bacteria per cubic centimeter.

The bacteria are more readily seen if stained slightly, so Callison uses this fluid:

Hydrochloric acid.....	2 ccm.
Mercuric chloride 1 to 500.....	100 ccm.
Acid fuchsin, 1 per cent aqueous solution, enough to color.	

The author now uses a 1:20 dilution with a Zeiss leukocyte pipette, and the shallow counting chamber. When prepared the slide is placed on the leveled microscope stage for fifteen minutes to allow the bacteria to settle, then 100 small squares are counted.

$$\frac{\text{No. of bacteria counted} \times \text{dilution} \times 20,000}{\text{No. of squares counted}} \times 1,000 = \text{the number of bacteria in 1 ccm.}$$

A summary of the advantages and disadvantages of the different methods used follows:

1. Some method employing the hæmocytometer offers the most accurate technique for standardizing vaccines.

2. Comparisons of different counts made of the same suspension by Wright's method showed an average variation of 15 per cent.

3. Comparisons of different counts made of the same suspension by the 0.02 mm. hæmocytometer showed an average variation of 5 per cent.

4. Comparisons of counts of the same suspension made by Wright's method, Allen's modification, and the chamber method (0.02 mm.) showed that the former two gave a much less number of bacteria.

5. A less degree of uniformity of counts has been obtained with the 0.1 mm. chamber than with the 0.02 mm.

6. Callison's diluting fluid seems to be the best of any so far used.

7. The plate method of standardizing vaccines takes too long and is too cumbersome to be used in routine work. It also greatly underestimates the number of organisms in a suspension.

8. The nephelometer method possesses certain advantages, in that it is simple and quick, but it is not an accurate method, as it is impossible to judge the concentrations correctly.

C. D. HOLMES.

BLOOD

Warfield, L. M.: The Normal Differential Leucocyte Count; Proposed Classification of the White Blood-Cells. *J. Am. M. Ass.*, 1915, lxiv, 1296.

The author urges a uniform classification of the white cells of the blood, based upon their origin. The two main classes of the leucocytes of normal blood are the granular and non-granular forms. The granular cells include the polymorphonuclear neutrophiles, eosinophiles, and basophiles which are derived from the parent myeloblasts, which pass through the stage of the granular myelocytes.

The non-granular cells are:

1. Lymphocytes, which probably have their origin in the germinal centers of the lymph-glands, although under pathologic conditions lymph tissue anywhere in the body may produce them. These lymphocytes are divided into the large and small forms. Warfield is of the opinion that the large form represents a younger, more immature cell, because in acute lymphatic leukæmia these cells predominate. On the contrary, small lymphocytes occupy the foreground in chronic lymphatic leukæmia, and hence represent more mature forms.

2. The so-called transitional cells or endothelocytes, which constitute 6 to 8 per cent of the white cells and are derived apparently from the capillary and lymph-space endothelium, and also from the lining of the capillaries and lymph-spaces of the spleen.

Large mononuclear cells correspond to Türk's irritation forms. Pappenheim thinks they are plasma-cells derived from lymph-cells in response to chronic inflammation.

The normal differential count is as follows:

	Percentage.
Polymorphonuclear neutrophiles.....	50 to 60
Polymorphonuclear eosinophiles.....	2 to 8
Polymorphonuclear basophiles.....	0.4 to 2
Lymphocytes, mature.....	20 to 30
Lymphocytes, immature.....	5 to 10
Endotheliocytes.....	5 to 9
Large mononuclears.....	0 to 2

HENRY J. VAN DEN BERG.

Levison, L. A.: Leucocytosis a Deceptive Sign in Abdominal Hæmorrhages. *J. Am. M. Ass.*, 1915, lxi, 1294.

Levison points out that a leucocytosis does not necessarily indicate an inflammatory condition, but may be caused by abdominal hæmorrhages, as for example in a ruptured tube, and other causes. This condition may be followed in a short time by a hyperleucocytosis which may reach figures higher than those usually noted in appendicitis. The points of the article are well summed up in the following conclusions:

1. A leucocytosis should not be relied on as a differential point when the clinical signs demand the differentiation of appendicitis or other inflammatory trouble in the abdomen, and an intra-abdominal hæmorrhage.
2. Leucocytosis due to intra-abdominal hæmorrhage is to be distinguished from the post-hæmorrhagic leucocytosis which follows any severe bleeding.
3. Leucocytosis from intra-abdominal hæmorrhage comes on within twenty-four hours and lasts until the second day.
4. The leucocytosis is ascribed to an irritation of the blood-forming organs by the absorbed constituents of the blood. The peritoneum may be a factor in the formation of white cells.
5. The morphologic blood picture is not changed.

HENRY J. VAN DEN BERG.

Pupovac, D.: Arteriotomy in Embolism (Ein Beitrag zur Arteriotomie bei Embolie). *Wien. klin. Wchnschr.*, 1915, xxviii, 90.

The author reports a successful operated case of bilateral embolism of the femoral artery at the bifurcation of the profunda femoris artery. The second operation occurred four weeks after the first. In both operations the artery was opened up, the thrombus removed, and the vessel sutured. Immediate restoration of the circulation resulted, with disappearance of the obstruction symptoms. The first operation was performed nineteen hours after dislodgment of the thrombus, and the second five hours after. The patient, who lived four weeks after the second operation, showed no ill effects following the temporary obstruction of the circulation.

L. A. JUHNKE.

McLean, A.: Thrombosis and Embolism. *Surg., Gynec. & Obst.*, 1915, xx, 457.

The author speaks of the difficulty of causing the formation of a thrombosis experimentally. Dif-

ferent methods were tried and only in the presence of an infection did he succeed in causing one to form. In the experimental work the following facts were noticed:

1. When a vein is ligated in continuity the blood in the vein will clot only on one side of the point of ligation; that is, the side from which the blood is coming.

2. In ligating a vein between two ligatures, say two inches apart, the blood between the ligatures clots very slowly, and if left for a week or more the contents of the ligated vein will have entirely disappeared, a fibrous cordlike structure alone remaining.

3. The same result is accomplished by ligating an artery between two ligatures.

4. Simple crushing of a vein will not cause a clot at the point of crushing. The crushing can be repeated in 48 hours and a clot will not form at the site. Examination of the repeatedly crushed vein two weeks after the last crushing will show a thickening of all the coats of the vein, due to an increased amount of fibrous tissue, the intima remaining as smooth and glistening as before.

5. Crushing of a vein with the subsequent introduction of a 24-hour bouillon culture of staphylococci and again crushing the vein, to grind (as it were) the staphylococci into the walls of the vein, will not produce a clot or thrombus at the site of the crushing and injection of the staphylococci.

6. The introduction of a sterile thread into the lumen of a vein, allowing about one-half to three-quarters of an inch to remain suspended inside of the vein, that is, oscillating in the blood-stream, failed to produce a clot or thrombus either at the point of the introduction of the thread or around the thread itself.

7. A sterile thread introduced into the artery in the same way and allowed to remain there for 4, 5, and 7 days will not cause the formation of a clot on the thread itself nor upon the wall of the artery at the point where the thread is introduced.

8. The introduction of a thread infected with staphylococcus albus or aureus will in 3 or 4 days cause the formation of a thrombus at the point of the introduction of the infected thread. The thrombus becomes attached to the vein at the point where the infected thread enters. It will not entirely occlude the lumen of the vein; it will grow or enlarge in the direction of the blood-stream, remaining suspended at a single point.

9. A thread infected either with the colon bacillus or with the staphylococcus aureus introduced into an artery in a similar manner, causes the formation of a firm clot, as proved by post-mortem findings five days after the introduction of the thread.

10. Sterile threads one-half inch long "let go" into the circulation caused no symptoms up to the present writing — seven weeks.

11. An infected thread (colon bacillus) one inch long let loose in the circulation caused a sudden death in three and one-half days. Post-mortem examination showed a seropurulent fluid in the

pleural cavity, and the embolus (thread with blood-clot, infected with colon bacillus, around it) was found in the right lung.

The conclusions arrived at are that—

1. Endothelial damage, on which so much stress is usually laid, is not, *per se*, a cause of thrombosis.

2. Infection and necrosis or the toxins derived from an infectious and necrotic process are probably the most important factors in the production of a thrombus.

3. A slowing of the blood-stream is a contributory cause but, *per se*, will not cause a thrombus to form.

BLOOD AND LYMPH VESSELS

Horsley, J. S., and Whitehead, R. H.: A Study of Reversal of the Circulation in the Lower Extremity. *J. Am. M. Ass.*, 1915, lxiv, 873.

The operation for the reversal of the circulation in the lower extremity began to receive attention following the work of Carrel and others in successful blood-vessel suturing about ten years ago. Certain cases of gangrene of the foot and leg due to gradual occlusion of the arteries from endarteritis have been treated by switching the arterial stream to a vein in the hope that the blood-pressure would force the valves of the veins and so supply nutrition to the tissues. Among those who favor this operation are Carrel, Guthrie, Bernheim, Weiting, and Goodman. John B. Murphy, Bernheim, and Weiting favor a lateral rather than an end-to-end anastomosis, and they suggest the tying off of the cardiac end of the vein at the point of operation. Carrel and Guthrie favor the end-to-end anastomosis. On the other hand Coenen of Breslau asserts that the operation is practically worthless clinically, as not all of the valves give way and the blood is shunted off through the first large anastomotic vein back to the heart.

After reporting cases and reviewing the literature, Halstead and Vaughan conclude that reversal of the circulation has little practical usefulness.

In an effort to throw some light on the subject, a series of experiments was undertaken in an effort to ascertain what became of the blood in the affected limb after such an anastomosis. Obviously in order to prove this procedure of benefit it must be established (1) that the blood in the reversed vein reaches the ultimate capillaries of the foot; (2) that the blood in the venous capillaries can nourish the tissues; and (3) how this blood is brought back from the venous capillaries to the heart.

Experiments are directed at the first of these problems. Twelve experiments were done, in all of which the lower extremity (left) of the dog was operated upon, and an end-to-end anastomosis done in each case. The proximal end of the artery was united to the distal end of the vein from one to two inches below Poupart's ligament. Of the 12 dogs operated upon, 2 died of sepsis and the death of another may have been partly due to the same cause. In the remaining 9 dogs, 7 operations were entirely successful and 1 partially so; and there was only one

complete failure. Only 5 of the dogs were injected, examined with the X-ray, and dissected, and in one of these there was complete occlusion of the anastomosis. One dog died of influenza and was given a partial examination, so that the reports deal with only 5 out of the 12 operations.

The X-ray shows that in 4 of the 6 dogs the injection mass reached only a short distance below the knee, and that it returned through the back part of the thigh in the general direction of the branches of the iliac veins. In only one case was the injection mass found near the foot, although all the dogs had some of the mass in the inferior vena cava, except those killed shortly after the operation.

The apparent and immediate good results reported in connection with this operation, especially in the hands of inexperienced operators, are largely due to the fact that with this procedure there is a damming back of the blood into the limb. The indication for the operation is generally an impending gangrene due to partial occlusion of the terminal arterioles; but as there had been no damage done to the veins, and as the blood was removed from the limb without hindrance, better blood-supply would at once be apparent by a lessened drainage whether due to reversal of the circulation or to the formation of a thrombus.

The following conclusions may be drawn from these experiments:

1. The tendency of the arterial blood in a reversed femoral vein is to return to the vena cava by the nearest anastomotic route.

2. In the course of time very large anastomotic veins form so that the mass injected into the reversed circulation quickly and easily finds its way into the vena cava.

3. It is most probable that the arterial blood in the reversed circulation never reaches the ultimate venous capillaries of the foot, but if it does it must be after many weeks, long after the time that any good could be accomplished by bringing nutrition to the tissues, even if nutrition could be absorbed from venous capillaries.

These experiments seem to show that even when the full arterial pressure of the femoral artery is turned into the femoral vein by an end-to-end anastomosis, the arterial blood in the reversed vein never reaches the venous capillaries of the foot, and does not even reach the smaller veins in the lower part of the leg for more than twenty-two days.

C. D. HOLMES.

Heyrovsky, H.: Infected Wounds of Blood-Vessels (Über infizierte Gefässschüsse). *Wien. klin. Wchnschr.*, 1915, xxviii, 14.

Heyrovsky reports injury of large arteries in 30 of the 1,710 wounds treated at the surgical clinic in Vienna. There was late secondary hæmorrhage in 21 cases and three of the patients died. Death in each case was due to ascending thrombosis above the ligature that had been placed around the artery, and had been applied too close to the point of injury

in order to spare an important branch above. The consequence was profuse hæmorrhage in one case and fatal thrombosis in the three mentioned. The patients might have been saved if the ligature had been applied higher where the tissue was absolutely sound. In the 9 non-infected cases recovery was prompt and complete, but amputation was necessary in 6 of the infected cases.

A. Goss.

Grant, E. O.: End-to-End Anastomosis of the Axillary Artery. *Surg., Gynec. & Obst.*, 1915, xx, 447.

The author discusses the nervous and circulatory disturbances following end-to-end suture of the axillary artery with a return of the pulse. The case cited was shot in the first portion of the axillary artery and an entire circular portion of the artery shot away. The ends were approximated by the Carrel method within one hour after the injury. No injury of the nerve-trunks was visible. The pulse returned in eight days, but has never been equal to the opposite pulse, and the author thinks that the delay was due to the time required to canalize the thrombus that existed peripheral to the point of suture. The nervous symptoms were pain in the forearm but no tenderness and practically no loss of sensation and very little loss of motion. The nervous symptoms gradually improved under treatment. The author thinks that this disturbance was due to an ischæmia of the nerve-trunks due to the circulation in that arm being below normal for a long period, as the disturbance decreased as the circulation increased in volume.

Stetten, D.: The Futility of Arteriovenous Anastomosis in the Treatment of Impending Gangrene of the Lower Extremity. *Surg., Gynec. & Obst.*, 1915, xx, 381.

In order to determine the utility of the Wieting operation, or so-called "reversal of the circulation," Stetten has carried out a series of injection experiments on a number of freshly amputated, gangrenous limbs with arterial occlusion. In the majority of the experiments he injected a 50 per cent emulsion of red oxide of lead in paraffin oil with a hand syringe. He first injected the largest vein in a retrograde direction and then radiographed the extremity. He then injected the main artery and took a second X-ray picture for comparison with the venous injection. A study of the radiographic pictures, which are reproduced in the paper, shows that—

1. A peripheral flow through the patent veins in cases of gangrene due to vascular disease is only possible to a very slight extent. The valves are apparently an impassable barrier even when the injection is made with extreme force. There is never any capillary circulation.

2. Even if the arteries are extensively diseased, the arterial circulation to the smallest capillaries is surprisingly good except in the actually gangrenous areas. The force needed to produce an excellent

arterial circulation is decidedly less than that required for an imperfect venous injection.

3. The return flow is normal if the artery is injected. If the vein is injected there is no return flow through the artery, but some of the fluid may be promptly short-circuited through immediately adjacent tributaries.

A critical analysis of the cases operated upon up to date and presented in tabular form gives in a total of 136 arteriovenous anastomoses or attempts thereat the following summary of results:

Deaths after operation.....	30
Deaths following amputation.....	11
Amputations.....	45
Operations abandoned on account of condition of vessels.....	12
Negative or doubtful cases.....	8
Successes in upper extremity.....	6
Successes in lower extremity.....	24

In other words there was a direct mortality of over 30 per cent and practically complete failure of the operation in more than 72 per cent of the cases. Of the so-called success in the lower extremity 8 are uncertain, so that there are left 16 cases reported as successful, or only about 11 per cent.

After considering the question from its various phases Stetten reaches the following conclusions:

1. The arterial circulation to the periphery even in very advanced arterial disease is in every respect better and easier than the retrograde venous circulation, mainly because of the obstruction of the valves and the short-circuiting of the blood through anastomoses of neighboring venous collaterals.

2. The operation is dangerous and the results have been unsatisfactory except in a very small percentage of cases.

3. The few so-called successful results have probably been obtained more in spite of than because of the operation, inasmuch as various factors play a rôle in the improvement of these cases, as improvement has been recorded after definite closure of the anastomosis, and as failure has occurred with perfect patency of the arteriovenous fistula.

4. Even if the anastomosis functionates, which it rarely does, there is no possibility of circulatory improvement, but rather quite the reverse.

5. The term "reversal of the circulation," at least as far as clinical cases are concerned, should be discarded.

6. Even if the usefulness of the operation were proved beyond question, the possible indications would be restricted to an unappreciable minimum.

The author advises that the operation be abandoned. A comprehensive bibliography of 167 numbers completes the paper.

Paton, L.: Case of Mikulicz's Disease. *Proc. Roy. Soc. Med.*, 1915, viii, Sect. Ophth., 28.

Paton reports a case of Mikulicz's disease in a woman aged 62. He states that the case agrees in its main features with the description given by von Mikulicz in *Billroth's Festschrift* in 1892. The case presented a symmetrical enlargement of the serous glands about the head and neck, including the glands

in the palate and at the tip of the tongue, the sub-maxillary, parotid, and lachrymal glands. The blood findings were similar to those of leukæmia of the lymphatic type.

W. G. REEDER.

Olitsky, P. J.: Results of Complement-Fixation Studies with the Corynebacterium Hodgkini.
J. Am. M. Ass., 1915, lxiv, 1134.

The serums of ten patients were tested and used in amounts varying from 0.05 to 0.2 ccm. (corresponding to 0.1 to 0.4 ccm. in Wassermann's system). Ordinarily, the reagents used are gauged so that from 0.05 to 0.1 ccm. gives perfect fixation with other bacterial antigens with specific serums. Using greater amounts of the serum, however, the maximum amount of antigen and the longest period for fixation (24 hours, ice-box), the results in these cases were uniformly negative. There were 6 cases of Hodgkin's disease, 2 of lymphosarcoma, 1 of lymphatic leukæmia, and 1 uncertain.

At the same time serums from patients suffering from other chronic conditions, as lues, tuberculosis, pernicious anæmia, carcinoma, etc., in all 34, were tested in a similar manner and the results were likewise negative.

An attempt was made to investigate the nature of the corynebacterium hodgekini by making cross-fixation experiments with other diphtheroids. The corynebacterium hodgekini is distinct from these pseudodiphtheria organisms.

EDWARD L. CORNELL.

POISONS

Hamm, A.: Absorption Fever or Retention Fever
(Resorptionsfieber oder Retentionsfieber). *München. med. Wchnschr.*, 1914, No. 38.

The teachings in regard to saprophytes, the obligate saprophytes to which is attributed the ability to grow on dead material, and the consequent assumption of a peculiar position in regard to wound infection must be discarded. There is only one category of pathogenic organisms, and their ability to cause infection or not depends upon the local or general condition of the patient and upon their virulence. It has been proven that bacteria formerly classed as genuine saprophytes when in contact with complement-containing body fluids do produce anaphylatoxin. According to Dold and Rados, this poison is demonstrable in the normal conjunctival sac, and after producing a slight injury to the tissue is capable of producing a definite inflammation upon the addition of dead bacteria. Its presence in the normal lochia cannot be doubted either, much less in the tissue juices of the retained products of conception or in infected liquor amnii.

The absorption of anaphylatoxin from the normal vaginal mucosa was proved by the author in von Ulenhuth's laboratory. The proof of increased absorbability from the vagina of the pregnant, of the parturient, and of the fever patient, has been rendered long ago. The question why absorption of bacterial anaphylatoxin does not occur oftener

during the puerperium is answered by the fact that the lochia in most cases is unlimited in its outflow and hence prevents free absorption. The term "absorption fever" should be dropped entirely and instead we should speak of "retention fever." Just as no infection occurs without intoxication, just so is there no intoxication without infection.

L. A. JUHNKE.

Mayer, A.: Treatment of Suppurating Wounds with Ultraviolet Rays (Über die Behandlung eiternder Wunden mit künstlicher Höhensonne). *Med. Klin.*, Berl., 1915, xi, 208.

When suppurating wounds have been systematically exposed to the mercury vapor lamp they have showed unusually rapid healing and subsidence of pain. The penetrating power of the rays is greater in diseased tissues, especially when the limb is raised to expel the blood. The skin is a living organ with physiologic functions, and these functions are materially promoted by the ultraviolet rays. Mayer is not so enthusiastic as Kromayer, who asserts that the mercury vapor lamp will save the wounded weeks of hospital treatment.

Mayer has found that fluorescent substances, such as eosin, seem to sensitize the tissues, and then they respond more readily to ultraviolet rays; it is his routine practice now to swab the suppurating surface with a solution of eosin preliminary to applying the rays. It may be possible, he adds, to treat peritonitis in this way, applying the rays when the abdomen has been opened; he is now experimenting in this line. Friedberg last year reported the successful application of the ultraviolet rays in disinfection of the throat preliminary to operative treatment, and in diphtheria.

A. Goss.

ELECTROLOGY

Cotton, W.: An Apparatus for X-Ray Localization.
Brit. M. J., 1915, i, 464.

Cotton has an apparatus for locating foreign bodies for use with any tube stand and table in which the tube can be worked under the table. Localization can be done fluoroscopically or with plates. The essential part of the apparatus consists of two plane surfaces connected by strips like ordinary parallel rulers which keep them always parallel to each other and to the table top and the tube. These strips allow the adjustment of the distance between the two "decks" while keeping the surfaces always parallel. The patient lies between "decks," the upper "deck" carrying the plate or fluorescent screen. Two observations or exposures are made with the tube occupying different positions, the location of the shadow of the foreign body, and of the source of the rays being noted in each. The distance between the tube and screen being known and also the distance the tube was moved, the location of the foreign body is determined by the ordinary methods of triangulation.

G. W. GRIER.

Schwarz, G.: The Recognition of a Gas Phlegmon in the Röntgen Plate (Erkennbarkeit der Gasphlegmone im Röntgenbild). *Wien. klin. Wchnschr.*, 1915, xxviii, 92.

As gas phlegmons accompany bullet and shrapnel wounds quite frequently, the author calls attention to their recognition in the X-ray picture. They appear among the soft tissues as either round or oval, isolated or confluent spots, appearing dark on the negative and light on the positive, during transillumination. The spots look like the holes in cheese and undoubtedly are similar in origin.

L. A. JUHNKE.

Hernaman-Johnson, F.: Radiology and Electrotherapeutics in Wartime. *Practitioner*, Lond., 1915, xciv, 396.

Aside from the injuries to be expected in training camps or on battlefields, a large number of kidney and bladder cases have been examined, and while few stones have been found, the use of the X-ray was a decided aid in the diagnosis of these confusing cases where the symptoms caused by the exposure in the trenches and long marches simulated stone or gravel.

Attention is called to the chance of error in studying either fractures, or the localization of fragments of foreign bodies with the "screen" similar to the chance of the surgeon extracting a foreign body where he has only one radiograph (röntgenogram); localization should always be made by one of the approved methods, several of which are mentioned; this will save the time of all concerned. Röntgen-therapy has been found useful in the treatment of mild cases of lupus, keloids, and sluggish ulcers. Electrotherapeutics have been of service in determining the gravity of nerve and muscle injury, and for this purpose the "Lewis Jones condenser set" was employed. In the treatment of neuritis, rheumatism, etc., to hasten the absorption of the inflammatory products, high-frequency radiant heat was also employed. By these methods many men believed to be permanently unfit for service have been restored to health and have resumed service on the firing line.

W. S. NEWCOMET.

Meyer, F. M.: The Present Status of Röntgen Deep Therapy (Der heutige Stand der Röntgentiefentherapie). *Strahlentherap.*, 1915, p. 135.

The technique of röntgen deep therapy in various conditions is discussed and a number of the conditions pointed out in which it has been of great service. First among these conditions is chronic leukæmia, both lymphatic and myelogenous. A case of pernicious anæmia that underwent great improvement under röntgen treatment is also described, a great part of which improvement the author attributes to the rays.

Good results have been obtained in many cases of Basedow's disease, the goiter decreasing in size and the heart symptoms improving. The results are not so good in simple goiter.

Among neurological affections that are very favorably influenced are trifacial neuralgia, intercostal neuralgia, and sciatica.

Recently good results have been reported in treating pulmonary tuberculosis with röntgen rays. The author's work along this line is too recent for definite results to be reported. In joint tuberculosis heliotherapy is the best treatment, combined in some cases with röntgen treatment; but in gland tuberculosis the results of röntgen treatment are brilliant; tubercular fistulæ are also closed up by röntgen treatment.

The röntgen treatment of myoma is discussed at length; it is to be preferred to surgery in most patients over 40. Irradiation is effective also in chronic metritis and dysmenorrhœa, but must be used with caution in the latter condition, as the sterilization of women for the sake of relieving dysmenorrhœa is not justifiable. In the treatment of malignant tumors röntgen rays are indicated in all non-operable cases and prophylactically after operation.

The author holds that the rays do not have any specific effect on cancer tissue; the fact that they act in the same way on eczema, tuberculosis, myoma, and carcinoma would indicate that they have no specific effect on the latter. They destroy all sorts of tissue, pathological often more rapidly than normal, but there is no specificity in their action.

A. Goss.

Salzmann, F.: Secondary Rays in Röntgen Deep Therapy as a Substitute for Radio-Active Substances (Sekundärstrahlen in der Röntgentiefentherapie als Ersatz radioaktiver Substanzen). *Deutsche med. Wchnschr.*, 1915, xli, 223.

Primary rays of 9 to 11 Wehnelt hardness are passed through an aluminum filter 2 or 3 mm. thick; after passing through the intervening soft tissues they reach the tumor. A layer of cadmium is placed underneath the tumor, or even in it, like a radium tube. This metal gives off secondary rays that act in much the same manner as radium. Werner claims that radio-active substances are superior to röntgen rays, especially in the treatment of tumors in readily accessible body cavities, as the nose, mouth, pharynx, larynx, œsophagus, rectum, vagina, uterus, bladder, etc., because the röntgen rays could not act upon the tumor from within outward. With this method of utilizing the secondary rays this objection is overcome. An absolute comparison of the γ -rays and those of a radio-active substance is, however, not possible.

Salzmann describes four cases of cancer of the uterus in which the method was used with excellent results. The cadmium plate was easily inserted in all cases. When it was removed there was sometimes capillary hæmorrhage as a result of hyperæmia of the tumor, due to mechanical irritation of the metal, which is desirable because it sensitizes the cancer tissue to the rays. The distance of the tube from the skin was 25 cm. in all cases.

A. Goss.

Kolischer, G.: Modern Radiotherapy in Malignant Tumors and in Localized Tuberculosis. *Lancet-Clin.*, 1915, cxiii, 287.

In the Michael Reese Hospital the results from radiotherapy are divided into four classes: (1) actually harmful, (2) failures, (3) encouraging, and (4) satisfactory.

In the first class the author mentions inoperable cancer of the cervix and of the lip. Metastases have been facilitated and the breaking down of tissues made more rapid. Cancers of the stomach are set down as simple failures. Encouraging results have been obtained in cancer of the breast, in which inoperable cases have been made operable and cases refusing operation have been much improved. Also, in cases of tumor of the bladder, the cystitis has been cleared up, the tenesmus and painful micturition have subsided. Results have been satisfactory in recurrent carcinoma of the breast, cancer of the rectum after excision, metastases in the groin following operation for cancer of the rectum, recurrent sarcoma of the thigh after amputation of the toe, inoperable cancer of the tongue with metastases, angiosarcoma, and inoperable cancer of the cervix. Sarcoma and carcinoma vaccines have been used in addition to the radiation, and these agents have been a valuable aid in the treatment.

In localized tuberculosis not involving bones the results have been uniformly satisfactory.

The author does not consider radiotherapy a substitute for surgery in malignant conditions, but believes that in all operable cases the bulk of the tumor should be removed before radiation is instituted. In this way absorption of toxins from the decaying masses of tumor growth is avoided.

The Forest needle and diathermy are suggested as the best methods of removing the tumor mass.

Energetic radiation should follow all operations for malignancy. Inoperable cases should be radiated in the hope of making them operable.

Attempts have been made to determine when sufficient radiation has been given, by means of the Aberhalden test. The results are not mentioned. The author believes that radiation of malignant tumors should be attempted only with large quantities of mesothorium or with X-rays of extreme hardness.

G. W. GRIER.

Werner, R.: Radiotherapy of Malignant Tumors of Internal Organs (Die Strahlenbehandlung der bösartigen Neubildungen innerer Organe). *Strahlentherapie*, 1915, v, 610.

After describing the technique of radiotherapy of tumors in various parts of the body and reviewing the results of numerous authors, Werner comes to the following conclusions:

1. Radiotherapy is the method of choice in operable as well as inoperable tumors located deep in the thorax, which have thus far been inaccessible to surgery.

2. It should be used in deep-seated carcinomata of the rectum in view of the unfavorable permanent

results of operative treatment, although it is still undecided whether it will give better permanent results than operation.

3. The same is true of tumors of the hypophysis.

4. In other internal organs the principle must still be maintained that all operable tumors should be operated upon and radiotherapy used to prevent recurrence.

5. Radiotherapy should be used as a preliminary treatment only in inoperable tumors; in others immediate operation is to be preferred.

6. A combination of radiotherapy with chemotherapy deserves further study, as it has given encouraging results thus far. A. Goss.

MILITARY SURGERY

Chavannaz, G.: Treatment of Fractures of the Skull at the Front (Sur le traitement des fractures du crane par armes à feu dans le service de l'avant). *Bull. et mém. Soc. de chir. de Par.*, 1915, xli, 549.

Chavannaz gives brief histories of 59 cases of fracture of the skull operated upon by him; he has had 67 cases in all, but the others were too near death when received to be operated upon.

He advocates operation in all cases of fracture of the skull. If the fracture is large the edges are smoothed off with bone forceps; if the opening is not large enough for examination of the wound a trephine is done; the toilette of the wound is carefully made, and bone splinters are looked for, but sometimes they are overlooked because they have penetrated the brain tissue so deeply. Because of the danger of infection he touches the brain surface with a gauze compress slightly moistened with dilute tincture of iodine. Drainage was maintained for 48 hours with a rubber drain; gauze drains were used only when there were extensive lesions of the intracranial sinuses. Unless the patients were in complete coma chloroform anæsthesia was given.

Among the 59 cases there were 26 deaths and 33 recoveries; that is, 55.91 per cent of cases were successful. The patients were kept under observation three weeks or more. In 7 of the cases there were lesions of the intracranial venous sinuses, one of which was treated by ligation, the others by tamponing. Four of these seven died. The accessory nasal sinuses were involved in 6 cases, and all of them recovered. Two of these patients also had injuries of the eye which necessitated enucleation. In 8 of the cases there was paralysis: 3 of these died, in 2 the paralysis disappeared, in 2 it improved markedly, and in 1 it persisted. A. Goss.

Goldstein: Gunshot Injuries of the Brain and Spinal Cord (Beobachtungen an Schussverletzungen des Gehirns und Rückenmarks). *Deutsche med. Wchnschr.*, 1915, xli, 215, 250.

There are three groups of such injuries: (1) those that are so severely injured that they die soon afterward; (2) those in which the symptoms are

very severe at first, but improve in a relatively short time and after a few weeks almost disappear; (3) those in which the symptoms do not improve, and in spite of the best care the patients die after a few weeks. Of course only the latter two classes are seen in the hospitals.

Surgeons differ as to the indication for treatment of wounds of the brain; many hold that they should be left untouched; others, probably fewer in number, advocate more active treatment, especially in tangential shots. Goldstein favors the more active plan of treatment. He describes two cases in which the wounds apparently healed well and for a time there was improvement in the general condition; but suddenly fever developed with signs of local suppuration and death followed. The suppuration was localized and there was no general meningitis. In such cases recovery might have been brought about by early operation. In the first case there was a bone splinter at the point of injury that could not be seen on superficial inspection; if the wound had been opened up freely the splinter could have been found and removed.

In injuries of the spinal cord, too, he advises more frequent operation. He describes two cases in which autopsy showed that operation might have been useful. In one there were bone splinters in the cord that might have been removed and in the other connective-tissue adhesions that might have been freed to relieve the cord from compression.

He advises operation in all cases where there are evidences of a transverse lesion and where flaccid paralysis with failure of reflexes persists for some time. The length of time before operation depends in part on the patient's general condition. If this is bad and there are marked bladder disturbances and severe decubitus, not more than three weeks at the most should elapse. Of course operation may be in vain if the cord is completely severed, and there is no way of telling absolutely from the clinical symptoms whether this is true; but the prognosis is hopeless in these cases anyway and no harm can be done; whereas, by operating, cases will be saved in which there is any possibility of cure. Operation should always be performed in cases where a bullet can be seen in the spinal canal in the röntgen picture and the disturbances do not improve.

A. Goss.

Bäumler, C.: Pneumothorax After Injuries of the Lung in War (Über Pneumothorax im späteren Verlauf von im Kriege erlittenen Lungenverletzungen). *München. med. Wchnschr.*, 1915, lxii, 289, 327.

There may be not only a primary pneumothorax immediately after a lung injury, but a secondary pneumothorax from an inflammatory focus in the lung involving the pleura and penetrating the pleural cavity. Five typical cases are described. An area with a tympanitic sound is observed more frequently than in pneumothorax appearing in chronic tuberculosis with pleural effusion. This

tympany is not at the boundary, but in the midst of the area of dullness caused by the accompanying hæmothorax or pleuritic exudate. A metallic sound shows that the collection of air is not in the lung but in the pleural cavity. In such cases spontaneous recovery may take place with an almost afebrile course, even when there is an abundant pleural exudate; but if there is a tolerably high fever persisting for some time an exploratory puncture should be made and the fluid examined microscopically and by culture for bacteria. The blood should also be examined for leucocytosis. If there is pus or if there are streptococci in the blood of the hæmothorax, the fluid contents of the thoracic cavity should be emptied by rib resection.

A. Goss.

Suchanek, E.: The Treatment of Shell Fractures of the Femur (Zur Behandlung der Schussfrakturen des Oberschenkels). *Wien. klin. Wchnschr.*, 1915, xxviii, 32.

At the von Eiselsberg Clinic the treatment of shell fractures of the femur is decidedly conservative. In discussing the condition in which the patients reach the clinic the author reviews the different methods employed for immobilization of the limb at the front and the results obtained with the different methods. In subcutaneous fractures and in fractures with only slight flesh wounds a plaster of Paris cast properly applied over two long boards and the limb sufficiently padded serves admirably for transportation purposes, although the cast may crumble as a result of moisture. He warns against its use, however, in cases with bad wounds or where infection is suspected, as phlegmons repeatedly develop and are overlooked until the cast is removed.

The method is rather impracticable at the extreme front, as the necessary boards and other supplies do not reach the front lines in most instances, and the technique of applying the cast is not common to all physicians. The Cramer wire splint and the one modified by von Eiselsberg have also proved very satisfactory for the transportation of femur fractures.

The treatment after arrival at the permanent hospital consists in extension. In cases of longitudinal displacement this treatment is supplemented by the Florschütz method of suspension and slight flexion at the knee, allowing access to the injury without moving the limb and without causing any pain.

If on account of lateral displacement a reposition of the fragments is not possible by the single traction of this method, the Bardenheuer extension method is employed, eventually supplemented with traction strips according to Ruckert, thus exercising traction on the individual fragments. Before applying either method X-ray pictures are taken, and a later picture is taken before a permanent cast is applied. This should not be done too early, as phlegmons may develop beneath the cast without

any appreciable temperature elevation and may cause considerable damage before they are noticed. After all flesh wounds are healed, the danger of phlegmon over, and the fragments in good apposition, a cast may be applied, usually during the fourth week of extension.

The author warns against the more energetic measures and against redressment in narcosis as well as against the nail extension method of Codivilla-Steinmann. The danger of spreading the infection in a fracture complicated by phlegmon speaks against the former, whereas the danger of infection of the drilled canal speaks against the latter. The author is well satisfied with the results obtained with the conservative method, a good functional result being striven for and usually obtained.

L. A. JUHNKE.

Engelmann, G.: Technical Aids in the Treatment of Gunshot Fractures of the Lower Extremity (Einige technische Beihilfe zur Behandlung von Schussfrakturen der unteren Extremität). *Wien. klin. Wchnschr.*, 1915, xxv, 178.

A tremendous number of splints is required for the wounded, and the splints must be very strong, simple, and interchangeable. Plaster casts are too troublesome to make under war conditions. To meet these requirements Engelmann has devised an extension splint which is proving very satisfactory. It is described and 12 illustrations show the application of the principle for patients able to be up and for those in bed. For the former the splint consists of two strips of metal connected with a ring at the top which fits over the thigh as high as it can be pushed up against the crotch. It is fastened at the lower end with a spike on each side, which is driven into the shoe between the sole and the upper, close to the heel. A slide and thumbscrew on each strip adjust it to the proper length. The trouser leg is slit and cut across above and below the lesion, so that it can be turned back and buttoned across the back to a row of buttons mounted on the outer strip of metal forming the splint.

A. Goss.

Haberer, H. von: Treatment of Infected Gunshot Wounds of Bones and Joints (Zur Behandlung und Beurteilung infizierter Gelenk- und Knochen-schüsse). *Med. Klin.*, Berl., 1915, xi, 179.

The freedom from infection of wounds of the joints in war is remarkable. Those which heal without infection far outnumber the infected cases. When a splint has not been applied to keep the joint immovable, the bandage usually works off during the trip to the base hospital and infection is inevitable; any kind of a splint prevents this.

Von Haberer's experience at Innsbruck has proved the folly and danger of draining a joint wound from the first. Fixation and leaving the joint alone are the best treatment at first; and even when there are pains and the joint and lymph glands swell and the temperature runs up to 104° F. with small, rapid pulse and dry tongue, a few hours' rest in bed with

the limb in good position will often do wonders for soldiers exhausted from a long railroad journey.

Gas phlegmons, of course, call for immediate attention, but otherwise operative treatment is not required unless the fever, pain, and swelling keep up. When such occurs, he punctures the joints at several points, and wherever pus or a purulent effusion is encountered he makes a small incision and introduces a retention rubber drain, rinsing out with a 1 or 4 per cent solution of formaldehyde if the secretions are thick. The functional outcome is much better with multiple small incisions than when the joint is opened up extensively, and the lesion heals fully as well. The dressings require changing only when they are too soaked to absorb more; moist dressings impede free discharge.

The author refrains from disturbing the shattered bones in the depths of the wound, but applies extension or passive movements, as indicated. In his 50 cases of severe suppurating injury of large joints amputation was done in only one case. When there is general sepsis, amputation is of no avail. In several such cases necropsy showed that the joint lesion was healing well; treatment should be directed against the septicemia and the patient should not be weakened further by a futile operation. He gives an illustrated description of several cases treated on these principles with complete success. Extension in semiflexion with the limb suspended can be improvised easily. Secondary gravity abscesses must be watched for.

A. Goss.

Marquis, E.: Reduction of the Number of Amputations at the Front (La réduction au maximum de l'amputation extemporanée des membres dans une ambulance de l'avant). *Bull. et mém. Soc. de chir. de Par.*, 1915, xli, 502.

Marquis pleads for the most conservative treatment possible at the front and the reduction of the number of amputations to a minimum. He describes 36 cases in which he saved limbs where amputation would have been considered necessary by many surgeons. Amputation was performed only in 16 very severe cases, with 8 recoveries and 8 deaths. Five patients died without having had amputation performed, but two of these died of tetanus and could not have been saved, even by immediate operation, two were too severely injured to stand amputation, leaving only one case in which the failure to amputate might have been blamed for the death. This was a patient who was apparently recovering and died suddenly, evidently from embolism.

The chief danger in conservative treatment is that the best moment for amputation may be passed by in the effort to save the limb. In order to avoid this, the greatest watchfulness is required on the part of the surgeon. It takes the patient longer to recover, too, and he may sometimes blame the surgeon for minor operations performed to avoid amputation; but the final results more than justify the added trouble.

A. Goss.

Marburg, O., and Ranzi, E.: Spinal-Cord Injuries Due to Bullets (Über Rückenmarksschüsse). *Wien. klin. Wchnschr.*, 1915, xxviii, 113.

The authors report a series of 35 spinal-cord injuries treated at the von Eiselsberg Clinic, Vienna. Although nothing particularly new is offered, the conclusions drawn may be summarized as follows:

1. In contradistinction to brain injuries, it is essential to wait a considerable time (four or five weeks) until the condition has become stationary before a laminectomy is performed.

2. The operation is contra-indicated in the presence of pulmonary or abdominal complications; likewise if severe suppurative processes or decubitus is present near the site of operation; also if the case is complicated by a suppurative ascending pyelitis.

3. Mild infection of the urinary tract and granulating bed sores are not contra-indications.

4. In spite of the small clinical material presented, it is evident that severe direct injuries and tangential shots, in contradistinction to indirect injuries, such as compression, œdema, liquor stasis, and local inflammation, are hardly adapted to radical surgical intervention. L. A. JUHNKE.

Howell, C. M. H.: Two Cases of Nerve Injuries Caused by Bullet Wounds. *Proc. Roy. Soc. Med.*, 1915, viii, *Neurol. Sect.*, 38.

In the first case, that of a patient aged 32, a bullet, in November, 1914, entered beneath the middle of the clavicle and escaped just below the spine of the scapula at the junction of the middle and outer thirds. There was immediate loss of power and cutaneous sensation in the arm; the latter, however, returned rapidly and is normal now. One month later voluntary power began to return to the muscles supplied by the ulnar nerve with steady improvement. Some slight power has returned to the extensors and flexors of the fingers and wrist. The muscles of the shoulder and upper arm are much wasted. There is complete reaction of degeneration in all muscles except those supplied by the ulnar nerve, and partial reaction of degeneration in the flexors of the fingers and wrist.

In the second case, that of a patient aged 28, a bullet, in November, 1914, entered beneath the gall-bladder and escaped to the right of the third lumbar spinous process, followed immediately by loss of power and cutaneous sensation in the right leg. At present the patient's thigh muscles are wasted and there is slight power of flexion; there is also a slight extension of the knee and there is dorsal flexion of the foot. The plantar flexion and flexion of the knee are stronger. There is complete anæsthesia over the fifth lumbar root area; partial over the fourth lumbar and first sacral. Knee and ankle-jerks are absent in the right, present in the left. The X-ray plate shows a diagonal fracture of the body of the third lumbar vertebra.

PHILLIPS M. CHASE.

Auerbach, S.: Treatment of Gunshot Injuries of Peripheral Nerves (Zur Behandlung der Schussverletzungen peripherischer Nerven). *Deutsche med. Wchnschr.*, 1915, xli, 254.

There is a great deal of difference of opinion as to whether gunshot injuries of the peripheral nerves should be treated operatively or conservatively and as to how long electrical and mechanical treatment should be continued before operation is undertaken. From his experience thus far Auerbach is inclined to adopt the following rules:

1. Those cases are to be treated conservatively in which the motor and sensory disturbances are slight and in which electrical examination reveals only a slight decrease in electrical excitability or a partial reaction of degeneration. In such cases there is an improvement in function in three or four weeks, although complete recovery may take eight weeks, or even three months.

2. Those cases should be operated on in which there is complete motor paralysis and complete reaction of degeneration. As soon as the wound is healed the nerve should be laid bare and its condition determined and the operative indications decided upon. Neurolysis may be performed, embedding the nerve in sound muscle tissue, or the nerve may be enclosed in tubes of various materials, or if the nerve-trunk is completely severed nerve-suture may be done. If there is extensive loss of substance of the injured nerve, one of the various plastic operations on nerves may be performed. If there is a neuroma, the nerve should be resected into sound tissue and a plastic operation performed. If there are callous changes, such segments of the nerve should be resected.

3. It is more difficult to decide on treatment in the transition cases between the first and second group, but Auerbach is inclined in doubtful cases to advise exposing the nerve, as it is not a dangerous procedure. If conservative treatment is preferred, he would advise that if there is no functional improvement in six or eight weeks operation should then be performed.

4. Operation is also indicated in cases in which there is severe and long-continued pain. This complication is quite frequent. Of course operative treatment in all cases must be followed by systematic electrical and mechanical treatment.

A. GOSS.

Seefisch, G.: Gas Phlegmons on the Field (Die Gasphlegmone im Felde). *Deutsche med. Wchnschr.*, 1915, xli, 256.

Gas phlegmons, which are frequently observed after injuries from artillery fire, very frequently lead to gangrene, but the prognosis, even when there is very great development of gas is not bad if extensive incisions are promptly made into healthy tissue. Amputation must be performed near the boundary of the gangrene, and care must be taken to make a useful stump; secondary suture should be performed as soon as possible — within the first week.

If a gas phlegmon is recognized early and free incisions made, gangrene can be prevented. Seefisch has treated 12 severe cases of gangrene on these principles without losing one, and most of them could be discharged within a few weeks with a good stump almost completely healed. Of course the most of the cases of gas phlegmon, and the severest ones, are seen in the field hospitals, where it is difficult to give oxygen treatment, because the physicians are so overwhelmed with the numbers of wounded brought in during the day that there is no time for it. The cases may be irrigated, however, with hydrogen peroxide. A. Goss.

Böcker, W.: The Treatment of Gas Phlegmon in the Field (Die Behandlung der Gasphlegmone im Felde). *Med. Klin.*, Berl., 1915, xi, 329.

The author treats superficial wounds by painting the surrounding skin with tincture of iodine and irrigating the wounds with 3 per cent hydrogen peroxide. Dry dressings should always be used, as moist dressings favor the development of bacteria. Pockets and cavities should be kept open. Unnecessary dressings and too early transportation

should be avoided, for rest and fixation are the best treatment. During the dry weather of the first few months of the war there was little severe infection, but after the rains set in and the wounds were soiled with mud from the trenches conditions were much worse. The percentage of tetanus infections was very high, and in spite of the administration of tetanus antitoxin, the majority of the patients died.

Gas phlegmon is more unusual. It is distinguished by a copper color of the skin, rapidly increasing oedema, and in the worst cases, gangrene. The danger lies in the rapidity of its development. The mortality is at least four-fifths of the total number of cases. Three cases are described illustrating the rapidity of development of gangrene. After gangrene has developed amputation is the only treatment; if the cases are seen early and treatment given at once, insufflation of oxygen is effective. It is difficult to keep a supply of oxygen at the front, but the author suggests than an abundant supply of oxygen tanks be kept at a field hospital as near as possible to the lines and the wounded rushed to it as quickly as possible by automobile. A. Goss.

GYNECOLOGY

UTERUS

Rubin, I. C.: X-Ray Diagnosis in Gynecology with the Aid of Intra-Uterine Collargol Injections. *Surg., Gynec. & Obst.*, 1915, xx, 435.

By means of X-rays and collargol injected within the urine cavity it is possible to determine the presence of intra-uterine tumors and also the patency of the fallopian tubes. The amount necessary for the injection in the average case is 5 ccm. Ordinarily the injection is painless. When pain occurs it is due to distention or to excessive pressure employed during the injection. This method was tried in 8 cases. In 4 cases a 10 per cent collargol solution was used; in 4 other cases a 5 per cent solution was used. With the stronger solution the X-ray picture was satisfactory. The weaker solution was not opaque enough to be of value. There were no bad sequelæ, no adhesions or exudates. Menses continued as before the injection. The conditions contra-indicating the employment of the collargol injection are definitely known as acute salpingitis, acute gonorrhœal endometritis, and post-abortive febrile conditions. The method should be of value in differentiating intra-uterine from extra-uterine tumors; in demonstrating certain malformations of the uterus and possibly also of the tubes; in determining whether a single or bilateral salpingectomy had been done on a patient previously operated; and in studying true flexions of the uterus and maldevelopments.

Williams, J. T.: The Rôle of the Pelvic Fascia as a Uterine Support. *Am. J. Obst.*, N. Y. 1915, lxxi, 575.

The author states that from close observation of a large number of patients suffering from lacerations and loss of support incident to injuries received at parturition, certain well substantiated facts are apparent.

The first of these is that the perineum and levator ani have relatively little to do with the support of the uterus. This conclusion follows upon the observation that the uterus lies in a distinctly higher plane in the pelvis than the perineum and levator ani. It is borne out by three facts: (1) that prolapse and procidentia may occur in women with unlacerated perineum and levator ani, and even, though rarely, in virgins; (2) by the temporary prolapse which not infrequently follows upon delivery, often without perineal tear; and (3) larger rectoceles and complete perineal tears may exist without prolapse of the uterus or bladder.

That the external perineum has little to do with the support of the rectum and posterior vaginal wall

is shown by the fact that complete tears are not necessarily accompanied by rectocele. But rectocele may occur when the levator is injured, even though the external perineum remains intact.

In the nulliparous woman, the cervix is fixed at a point high in the pelvis, the corpus being more or less movable upon the supravaginal cervix as a pivot. When prolapse occurs the cervix becomes equally movable with the corpus. Prolapse of the uterus is always associated with prolapse of the bladder.

From these clinical facts two conclusions are drawn: (1) The support of the uterus and bladder are closely connected or identical. (2) The uterus receives its support at the level of the supravaginal cervix.

The author gives a careful description of the pelvic fascia and has attempted to set forth a simpler conception of this structure than the one described by Webster.

C. H. DAVIS.

Jacoby, A.: Pituitary Extract in Uterine Bleeding. *Med. Rec.*, 1915, lxxxvii, 226.

The author enumerates the common causative factors in uterine bleeding, both constitutional and local. He states that theoretically the uterine bleeding is due to an increase in the stimulating agent which causes the normal menstrual flow which is found in the internal secretion produced by the ovaries.

For the control of the bleeding, Jacoby used pituitary extract in 1 ccm. doses every other day until 10 doses were given. He reports uniformly successful results in 15 cases treated in this way. Several of the patients complained of cramps in the lower abdomen and of occasional nausea. One patient complained of vomiting and diarrhœa, which disappeared when the dose was diminished.

Among the conditions in which the injections were used were anæmia, threatened abortion, hypertrophy of the endometrium, fibrosis uteri, fibroids, subinvolution, retroversion, disease of the adnexa, parametritis, and certain cases following vaginal operation with anterior fixation of the uterus.

The 15 cases are tabulated to show the menstrual history, diagnosis, number of injections, and results.

S. A. CHALFANT.

Lockard, L. B.: Nasal Treatment of Dysmenorrhœa. *Colo. Med.*, 1915, xii, 110.

The author mentions several instances which tend to prove the relationship existing between the genital organs and the nose; this relationship, as described by Fliess, is limited to certain points,

which he termed "genital spots:" the tuberculum septi and anterior inferior turbinal on either side. In a series of experiments on young animals by Knoblauch and Roeder he states that destruction of these so-called genital spots resulted in the animals as well as the controls growing, but they remained sexually indifferent and their genital organs remained practically rudimentary.

Fliess in 1897 was the first to call attention to the frequent cure of dysmenorrhœa by intranasal treatment; he found that during such an attack the application of cocaine to the genital spots would control the pain in the back and abdomen, and in many instances the headache would disappear; if only the turbinal were anesthetized the headache ceased, but not the abdominal pain; if one side of the nose was treated the pain on the opposite side was controlled. This localization, however, has not been substantiated by other observers.

In several of the author's cases, nasal treatment has resulted in relief of menstrual pains without the patient being aware that this object was sought. In April he made an effort to communicate with all patients treated since April, 1910, with the following results: in 18 instances no report could be obtained; 22 cases reported that they were absolutely cured; 7 of the older cases reported vast improvements, and only 5 in addition to the 15, which were not relieved immediately, reported no benefits; in view of these results, he argues that the treatment is certainly feasible. W. D. PHILLIPS.

Aschheim: Glycogen Content of the Uterine Mucosa (Über den Glykogengehalt der Uterus-schleimhaut). *Zentralbl. f. Gynäk.*, 1915, xxxix, 65.

The deposition of glycogen in the uterine mucosa of the sexually mature woman is a physiological process and is in relation with the menstrual anatomic changes occurring in the mucosa. In the glands of the post-menstrual period and in those of the first half of the interval period the glycogen is absent. With the onset of the secretory activity during the last days of the interval glycogen appears along with some albuminous secretion in the glands of the mucosa, which remains with the mucus for some time. The stroma-cells also contain glycogen during the premenstruum, likewise the surface layer of muscle. During menstruation glycogen is expelled just like the mucus, and after cessation of the menses is present only in a few persisting premenstrual glands. If pregnancy sets in, the glands and stroma-cells retain their glycogen-forming, just as they do their mucus-forming, function.

In regard to the significance of glycogen a few words may be said. In general there are two kinds: the anchored glycogen, occurring in epithelium and cartilage and in tissues having a poor blood supply, and the depot glycogen which is found in the liver and muscles. Here it is either split up further, as nutrition demands, or is stored as food. During pregnancy the glycogen in the glands probably is a food stored there and in the decidua ready for

immediate consumption by the embryo. The presence of glycogen in the uterine mucosa must certainly not be considered as pathological. Cases of sterility without definite cause should be examined for the glycogen content of the uterine mucosa during the premenstrual period. L. A. JUHNKE.

Bissell, D.: A Contribution to the Study of Movable Retrodisplacements of the Uterus. *Am. J. Obst.*, N. Y., 1915, lxxi, 561.

The author considers that the axis of rotation of the uterus is located near the meeting of the long axis of the corpus with that of the cervix. The uterus may rise or fall, move anteriorly or posteriorly, and remain within the limits of normal motion so long as its axis of rotation keeps within an imaginary circle of 2 cm. more or less in diameter, the center of which is located near the intersection of the long axis of the cervix with that of the corpus when the uterus is in an extreme anterior position. The center of this circle does not vary. The axis of rotation changes with every change in the position of the uterus. The anterior limit is normally reached when the bladder is empty, and the posterior when it is full.

The uterus is supported and maintained in its central pelvic position chiefly by the fibrous connective and non-striated muscular tissue which completely encircle, the lower segment about the junction of the corpus and cervix. These tissues radiating in all directions are connected directly and indirectly with the surrounding bony framework, and constitute what is known as the pelvic fascial diaphragm. This fascial diaphragm is the first and chief barrier to the descent of the uterus, while the muscular floor constitutes the second line of defense. This diaphragm may be divided into three groups of tissue, and in addition to their common function of supporting the uterus, each group possesses an individual action. The tissues radiating posteriorly limit the forward excursions of the lower uterine segment. Those radiating anteriorly blend with the base of the bladder and the anterior vaginal wall and limit the posterior excursion of the lower uterine segment, while those radiating laterally limit the lateral motion of the lower segment and the descent of the entire organ.

The ability of the pelvic fascial diaphragm to restore and maintain the uterus in the extreme anterior or horizontal position is the key to the entire situation.

So long as the uterus is in the standard position all forces directed from above upon it and its adjacent structures are shared equally by the group of tissues constituting the fascial diaphragm, but as the corpus recedes the distribution of the forces becomes more and more unequal and the liability to permanent loss of equilibrium is greater and greater. Nature has provided the round, broad, and uterosacral ligaments as additional safeguards to be called upon when the loss of equilibrium is threatened. C. H. DAVIS.

Solomons, B.: Chronic Fixed Retroversion of the Uterus; a Plea for Operation. *Med. Press & Circ.*, 1915, xcix, 160.

The author urges operation by the abdominal route as the treatment of choice in these cases. He gives the symptoms of fixed retroversion as anæmia, menstrual disturbances, frequent micturition, backache, constipation, a feeling of weight and bearing down in the pelvis, and occasionally intermittent abdominal pain due to the adhesions.

Palliative treatments are unsatisfactory, as they rarely or never cure, keep the patient a chronic invalid, and at best necessitate a pessary life with all its disadvantages.

Operative treatment by the vaginal route is also unsatisfactory, on account of the small working space, the difficulty of hæmostasis, and the danger of bowel injury.

Solomons advises a preliminary curettage and repair of lacerations. The abdomen is then opened from above, the adhesions separated, necessary attention given to the adnexæ, and the uterus fixed forward either by suspension or by one of the round ligament operations. Raw surfaces should be covered, the appendix examined, and removed if necessary, and search made for Lane's kink or Jackson's membrane. When drainage is necessary, the best method is by iodoform gauze through the cul-de-sac.

While pregnancy is not common in these cases, it does occur and is liable to cause serious trouble. The author reports a case operated upon when two or three months pregnant and concludes that the only satisfactory treatment of chronic retroversion of the uterus fixed by adhesions, whether the uterus be pregnant or not, is to free the adhesions by the abdominal route and suspend the uterus. The prognosis, both immediate and remote, is excellent.

S. A. CHALFANT.

ADNEXAL AND PERIUTERINE CONDITIONS

Wallart, J.: Studies in Regard to the Nerves of the Ovary and Especially of the Interstitial Gland (Studien über die Nerven des Eierstocks mit besonderer Berücksichtigung der interstitiellen Drüse). *Ztschr. f. Geburtsh. u. Gynäk.*, 1914, lxxvi, No. 2.

The author examined a large series of ovaries of humans, rabbits, guinea pigs, cats, and dogs in regard to the nerve supply. The entrance of the nerves into the ovary is at the hilus between the vessels. There the nerve bundles divide into numerous branches for vessels and muscles and for the cortex of the ovary. A few single branches do not divide but retain their caliber throughout the entire medulla. In the cortex of the ovary there is a dense plexus of fibers, medullary as well as non-medullary. The nerve supply to the ovary is more abundant than in most parenchymatous organs. The musculature of the ovary is supplied as abundantly as the vessels. Neither in the follicles in the

human nor in the investigated animals were fibers seen to enter between the cells of the granulosa layer.

The corpus luteum at the height of its development is but poorly supplied with nerve-fibers, whereas during the retrogressive stage it is abundantly supplied. The interstitial gland of the human as well as of the animal shows an extremely abundant network of nerve-fibers not only during the height of development but also during the retrogressive and end stage — so-called corpora fibrosa. From this fact it may be concluded that the interstitial gland of the ovary serves the organism in a manner which gives the ovary a neural and tumoral correlation to the other organs. In regard to the nerve-endings in the ovary nothing definite can be stated from the present investigations; at any rate there are many nerve-fibers ending in the stroma without any special end organ development.

In the tracts of the nerve-bundles and nerve-fibers of the ovary there are numerous and variable cells or cell-like structures included which are closely analogous to ganglion cells. Even though the probability is great that these structures are genuine ganglion cells, so far no proof can be advanced that such is the case.

L. A. JUHNKE.

Porter, M. F.: Sarcoma of the Ovary. *J. Indiana St. M. Ass.*, 1915, viii, 119.

The author's paper is based upon a comprehensive study of the literature of the subject, including a study of 26 reported cases, besides a review of 3 cases occurring in the author's practice.

The first patient, aged 38, complained of abdominal pain; constipation in the last five weeks; menses regular. The tumor, noticed first about five weeks before, was the size of a seven-months' pregnancy, nodular and cystic. At operation the abdomen was opened but the tumor was not removed, as it was thought the operation could do the patient no lasting good. The patient left the hospital at the end of a month unimproved, and no further history of her could be obtained.

In the second case the patient, aged 15 years, had had a tumor for a year; had pain in the chest; was very much emaciated, and the abdomen was larger than a pregnancy at term. Many adhesions were found at operation; the tumor involved both the uterus and the adnexæ on both sides, and weighed nine pounds, besides a large amount of fluid which was not estimated. The patient was in perfect health six months after operation. The microscopic diagnosis was large round-celled sarcoma.

In the third case the patient, aged 18, had been in general good health, but had noticed an abdominal growth during the last few weeks. She had no pain or other symptoms. At operation the mass proved to be a fibro-sarcoma of the left ovary. The patient is well now after 20 years, is married, and has had several children.

The author believes many cases of sarcoma of the

ovary are overlooked because of incomplete microscopical study, and for the same reason many ovarian tumors are diagnosed as sarcomata when they are not such at all. Averaging the percentages shown by sixteen observers in a series of over 3,000 cases of ovarian tumors we find the incidence of sarcoma to be 5.08 per cent. Sarcoma of the ovary is bilateral in about 17 per cent of all cases. It is especially likely to occur in the extremes of life. This sort of sarcoma is usually of rapid growth. In many cases the tumors reach the size of a seven-months' pregnancy in six weeks. They are usually firm and solid on palpation.

Concerning the complications met with, the author mentions ascites, though this may be found with carcinoma as well. In 168 cases referred to by Lippert, 7 showed adhesions, 11 had ascites, there was sarcoma of the uterus in one, parovarian cyst in one, and metastases in 4. Sutton has pointed out that in dermoids of the ovary masses of tissue are found which cannot be distinguished from sarcomatous tissue. The coexistence of sarcoma and carcinoma in the ovary is rare. All varieties of sarcoma have been found in the ovary. In the author's table the average age for the round-celled cases is a little less than 26 years; for the spindle-celled cases a little more than 41 years, and for the endothelioma 40 years. It is generally thought that round-celled sarcoma is more common in the young and spindle-celled tumors in adults.

The diagnosis of ovarian sarcoma is seldom made except at operation. Ovarian tumors occurring in girls under 15 are quite likely to be sarcomata, and if bilateral it is highly probable that they are. Bilateral solid ovarian tumors in children are usually sarcomata. Great rapidity of growth of a tumor or a period of rapid growth following a period of very slow growth in a tumor of stationary size should lead one to suspect sarcoma. Pain is a common symptom. Amenorrhœa, menorrhagia, or metrorrhagia are more common in sarcoma than in benign tumors of the ovary. Unless relieved by treatment, sarcoma of the ovary always terminates fatally. The prognosis is less favorable in children than in adults. Death occurs from involvement of other organs by metastases and by implantation. The mortality of the operation, *per se*, is also much higher in children than in adults. The prognosis is best in fibrosarcoma. The author advises operative treatment, even in apparently hopeless cases, in the hope of prolonging life and comfort. The use of Coley's fluid, arsacetin, and X-rays are recommended in such cases to help control the metastases.

In conclusion, the author says that the operation in sarcoma of the ovary offers a good chance for a permanent cure; that late operation rarely cures but usually gives relief and prolongs life, and that some seemingly hopeless cases have been benefited and cured for some months at least by operation and the use of Coley's fluid and by the combined use of the X-rays and arsacetin. C. D. HOLMES.

Smith, F. H., and Motley, J. C.: Sarcoma of Both Ovaries in a Child of Three Years. *Surg., Gynec. & Obst.*, 1915, xx, 419.

Double ovariectomy performed upon a child of 3 years for bilateral tumor of the ovaries, in October 1912, led to a search of the literature for like cases. Bilateral involvement in young children is rare, only 6 cases being recorded: one each of dermoid at 11½ years by Legueu; carcinoma at 14 years by Kouznetsky; teratoma at 14 years by Kartuschanskaja; sarcoma at 13 years by Croom; sarcoma in a fetus of 7¾ months by Doran; and carcinoma, at first exploration unilateral and at third operation three weeks later bilateral, in a child of 12 years by Martland.

The most complete compilation of recorded cases noted are: by Jochmann, 1898, who recorded 20 cases of solid tumors; by Hubert, 1901, recording 175 cases of cystic and solid tumors to the age of 17 years; and by Wiel, 1904 and 1905, recording 60 operated cases to the age of 10 years. In none of these is a bilateral case reported.

All strikingly agree as to the frequency of malignancy in children, varying in the several estimations between percentages of 31.8 and 34.2. Cystadenoma and embryoma are the most common tumors in childhood.

Post-operative mortality figures are unreliable, because many must have died later from recurrences and metastases. The available figures indicate a death-rate of 50 to 60 per cent.

The case now recorded is that of a white girl of 3 years, ailing a month with vague abdominal symptoms, which finally culminated in symptoms of partial obstruction, and three days before the discovery of two solid, sausage-shaped abdominal masses. Operation was proposed to relieve the obstruction, the identity of the masses being missed because of the rarity of the condition. Solid tumors, supposed to originate one from each ovary, were removed, after separating intestinal adhesions.

Pathological study by Willis of Richmond, Virginia, and Louis B. Wilson of Rochester, Minnesota, showed the tumors to be parovarian embryomata with sarcomatous (mesoblastic) tissues predominating. Upon this finding recurrence was predicted. Five months later the child returned with a generalized abdominal sarcomatosis, with death following seven months after operation.

Colombino, C.: Transplantation of Ovaries in the Human. (Über Transplantation der Ovarien beim Menschen). *Gynäk. Rundschau*, 1914, viii, 705.

The author reports a case of autoplasmic transplantation of the ovary in a young woman of 25, in whom a double tubo-ovariectomy was performed and the ovary placed in the inguinal region. Seven months later the uterus was removed for prolonged bleeding. Ten months later the patient returned to the hospital complaining of periodic swelling and pain over the site of implantation every 4 weeks lasting 3 to 4 days. On examination a small cystic

tumor the size of a walnut was palpable. On aspiration a tablespoonful of clear fluid was withdrawn. As the fluid re-formed and the pains increased the entire implanted and cystically degenerated ovary was extirpated. Symptoms of castration developed and were but poorly influenced by ovarian extract and bromides.

L. A. JUHNKE.

Stoeckel, W.: The Extraperitoneal Displacement of the Tubes as a Method of Sterilization (Die extraperitoneale Tubenverlagerung als Methode der Sterilisierung). *Zentralbl. f. Gynäk.*, 1915, xxxix, 161.

The author describes a method of sterilization in which he proceeds as though performing an Alexander-Adams operation: opens the peritoneal cavity, brings the tube through the opening and the hernial ring and places it extraperitoneally between the abdominal muscles and the anterior abdominal fascial sheath. The technique is very simple: incision as for an Alexander-Adams operation; the fasciae are separated, the diverticulum of Nuck is opened, an instrument is introduced into the abdominal cavity, and the tube brought out. The tube is pulled out as far as desired and the peritoneal opening is sutured around it with very fine sutures. By this method three-fourths of the tube can be brought outside the peritoneum. This extraperitoneal part of the tube is brought between the anterior fascial layer and the abdominal muscles, the fimbriated end being carried outward near the pelvic wall. The ovaries remain intraperitoneal. To prevent traction on the tubes the round ligament is drawn out and anchored to the fascia. Sensitiveness of the tubes so placed does not exist.

As he has only performed the operation on one case the author can state nothing definite regarding the results. The method must have further trial before it can be declared either practical or not. That it leaves a possibility of returning the tube to the abdominal cavity if later desired, and so creates the possibility of a future pregnancy taking place, is in its favor. Whether the tube will remain patent in its new location remains to be determined.

L. A. JUHNKE.

Wilcox, S. F.: Plaiting the Round Ligaments. *Surg., Gynec. & Obst.*, 1915, xx, 483.

The procedure is a modification of the one devised by Martin of Chicago.

After doing any necessary vaginal work, the round ligaments are dissected out through short vertical incisions running directly upward from the spines of the pubis. The edges of the muscles and the aponeurosis of the external oblique are brought together with a continuous suture of kangaroo tendon.

Then the tissues above the pubis are penetrated from one wound to the other by sharp-pointed forceps which carry the distal end of one ligament; as the forceps are withdrawn they carry back the other ligament, so that the two ligaments lie side by

side. Then the distal end of each ligament is made to pierce the large end of the other several times and may be carried back through itself. They are held in place by a few loose sutures of 10-day chromic gut, and the wounds are closed.

The advantages are:

1. The uterus is held in position by its natural supports.
2. The ligaments enlarge with pregnancy and undergo normal involution after parturition.
3. The ligaments are simply advanced — not shortened.
4. The abdomen is not opened; however, if necessary, one incision can be extended and the appendix removed or the pelvic adhesions broken up.

Recasens, S.: Diathermia in the Treatment of Diseases of the Adnexa (Die Diathermie als Behandlungsmittel bei adnexialen Entzündungen). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xli, 130.

Recasens reviews the changes that have taken place in the treatment of inflammations of the uterus and adnexa. The radical surgical treatment that has predominated for a good many years is now yielding to more conservative methods. The beneficial effect of heat in these conditions has long been known, but the problem was to apply the necessary degree of heat to the affected parts without injuring the overlying tissues. This can now be accomplished by means of direct high-frequency electrical currents applied to the diseased tissues.

The technique varies according to the nature and intensity of the pathological process to be treated. The effect of the hyperæmia induced by the treatment is best in cases of subacute pelvic peritonitis with no pus. One electrode is applied to the lumbosacral region and another of the same form to the abdomen. A current is thus produced that runs from before backward and produces hyperæmia in all the organs of the pelvis. It is important in these very extensive processes to use very large electrodes and to apply them directly to the surface of the skin. The heat should be developed slowly and progressively and should be continued for 30 to 40 minutes. In many cases the posterior electrode is replaced by a very large vaginal one which produces an ascending current, bringing about a complete change in the circulation of the organs lying between the two electrodes. In chronic processes with pus formation the effect is not so marked. Although the treatment has a striking effect on the pain, Recasens has never been able to see that it decreased the size of the tubal abscess.

The results are striking in chronic salpingo-oöphoritis with adhesions. After a few treatments the uterus is freely movable without pain. In chronic parametritis the results are also excellent. The exudate is absorbed so rapidly that Recasens thinks it a great mistake not to use diathermia in such cases. In addition to overcoming pain and causing absorption of the exudate, he thinks it is not claiming too much to say that it decreases

the virulence of the bacteria. He thinks this is true not only of gonorrhœal but also of tubercular processes.

A. Goss.

EXTERNAL GENITALIA

Powell, C.: Extensive Destruction of the Vulva and Adjacent Tissues Probably Due to Pneumococcal Infection. *J. Am. M. Ass.*, 1915, lxiv 1239.

The case of a white woman, aged 48, is reported. The patient was married at 16 and had been a widow for 27 years. She had never been pregnant. Menstruation occurred regularly every thirty days, a normal four-day flow.

Her trouble began two weeks before admission to the hospital, when a vulva pad worn during her menstrual period chafed and irritated the parts. A week previous she had procured some medicine from a physician to be used locally as a wash. She was positive that the wash did not smell of carbolic acid. Two days before admission to the hospital, the labia became greatly swollen, painful, and dark colored. The patient on admission was thin, pale, emaciated; temperature 100.2°, pulse about 100; bowels constipated; appetite and digestion good. The urine contained a trace of albumin, a few hyaline and granular casts, and some pus-cells; sugar was absent. A Wassermann test was negative. There was no glandular involvement. External examination of the genitals revealed an extensive foul-smelling ulceration, partly covered with a black necrotic mass. The area involved extended from above the pubic promontory to below the anus and, laterally, well outside of the labia majora on the inner surface of the thighs.

Under anæsthesia, an examination of the pelvic organs was made per vaginam. The uterus, tubes, and ovaries were apparently normal, as was also the vagina.

The necrotic mass was snipped off with scissors, showing an extensive destruction of the underlying fat and connective tissue, leaving the perineal muscles and lower two inches of the rectum exposed.

Pure carbolic acid was swabbed over the raw surfaces followed immediately by alcohol, and a dusting powder of equal parts of iodoform and boric acid was applied.

The laboratory report of cultures made from the necrotic mass and smears taken from the raw surface showed large numbers of pneumococci present, with a few streptococci. No spirilla were demonstrated.

The subsequent treatment of the case consisted of cleansing once daily, with a weak solution of hydrogen peroxide and the application of iodoform and boric acid powder. The patient was kept in bed. After the removal of the slough, the temperature dropped to normal, where it remained during convalescence. It was necessary to catheterize the patient every eight hours for ten days.

Healing progressed steadily; at the end of the

fourth week almost the whole of the ulcerated area had filled in and healed over. There was a surprisingly small amount of scar tissue visible, the normal skin seemingly having covered the greater part of the denuded area, growing in from the edges.

EDWARD L. CORNELL.

Drueck, C. J.: Leucorrhœa. *Chicago M. Recorder*, 1915, xxxvii, 228.

Vaginitis and its associated vulvitis is the most common pelvic disease causing leucorrhœa. The infection, which is usually gonorrhœal, although it may be due to other causes, may remain localized to the vulvovaginitis or it may spread rapidly to the uterus, tubes, and peritoneum.

Gonorrhœal vaginitis presents a profuse yellowish discharge and a feeling of fullness and dragging. In the vaginitis due to pregnancy and old age the tissues are hot, red, and swollen. The discharge is curdy and causes intense itching. In the senile vaginitis localized areas of the vaginal wall sometimes are abraded and the denuded surfaces may adhere, thus forming septa in the vagina which obliterate its lumen.

Hot douches of 1 per cent borophene flush away the debris and stimulate regeneration. The water should be 105° F. and a little more hot water added after one-fourth of the solution has been used, thus raising the temperature to 120° F. In the office treatment a douche is given, the vagina carefully dried out, and all visible mucopus removed. Then borophene powder full strength is insufflated carefully covering all of the vagina. This powder remains twelve hours and is then followed by another hot douche. This treatment is repeated in three days. In the virulent types where the powder treatment is not sufficient, the vagina and cervix should be swabbed carefully with 10 per cent silver nitrate, and the powder treatment continued later. Sometimes a single course of this treatment will affect a cure, or a repetition may be required. If another course is necessary an interval of a month should intervene.

In nearly all cases a cervicitis needs attention after the vaginitis has disappeared. A mucopurulent secretion chokes the cervical canal and flows into the vagina. This discharge is distinguished from other forms of leucorrhœa by its stringy, white-of-egg appearance.

The treatment of this stubborn condition requires much detailed attention. The cervix is exposed and wiped thoroughly clean. The mucous plug is removed and the canal after being wiped clean is slightly dilated. Cysts are opened widely and drained and, if large, are curetted. A Baret suppository is crowded into the opening of the canal, retained with a tampon and left for 12 hours; this is followed by the use of the above-mentioned hot douches each night and morning. The treatment is repeated twice each week.

In some cases the infection passes into the uterus and sets up an endometritis and metritis. Each

case presents its own peculiarities. Suppression of the lochia or menstruation always betokens serious infection. The discharges destroy the spermatozoa and the women are usually sterile, or if conception occurs the endometrium furnishes poor support to the ovum, and abortion occurs early. Acute cases require rest, salines, a plain absorbable diet, hot sitz baths, and vaginal douches.

Zweifel, E.: The Treatment of Leucorrhœa (Zur Behandlung des Fluor albus). *Med. Klin.*, Berl., 1914, No. 47.

The following treatment has given results in the treatment of leucorrhœa resulting from catarrh of the cervix and vagina. He introduces a tampon saturated with a 50 per cent sugar solution, followed by irrigation with two tablespoonfuls of hot water, the patient in the a recumbent position. Improvement is noticed after 8 or 10 days. Later the cervix is scarified with formalin. Even still better results are obtained with douches of 0.3 to 0.5 per cent of lactic-acid solutions, especially if the cervix erosions are first swabbed with a 5 per cent silver solution. The author found that leucorrhœa was stopped quicker by this method than by any other.

L. A. JUHNKE.

Ruge, E.: Experiences Derived from the First Twenty-Two Cases of Vaginal Operations Performed Under Parametric Infiltration Anæsthesia (Erfahrungen an den 22 ersten Fällen von vaginalen Operationen in parametraner Leitungsanästhesie). *München. med. Wchnschr.*, 1914, No. 52.

The author refers to a previous communication appearing in 1912 in which he reported two cases of vaginal extirpation of the uterus performed under parametric infiltration anæsthesia. Since then he has performed 17 more and 3 operations for retroflexio uteri. Although he refers to the above communication for the details of the technique, the method consists in the injection of 1 to 2 per cent novocaine into the parametric tissue and into the anterior and posterior vaginal wall. To 100 ccm. of the novocaine solution is added 5 drops of a 1 per cent suprarenal solution. The injection of the solution into the auto- and post-vaginal wall, according to recent experiments, is unnecessary; it however shortens the time for complete anæsthesia. The injection into the bladder and the swabbing out of the vaginal mucosa with the solution is likewise superfluous. On the evening before the operation 0.5 gm. veronal is given and one hour before the operation one-sixth grain morphine. The author has had only one failure. He believes there are individuals in whom novocaine fails to act. He had an experience of this kind while extirpating a lipoma on a patient and again two years later while performing a small operation on the little finger of the daughter of the same patient.

The author attributes the complete insensitivity of the rectum and bladder wall after the parametric infiltration to the diffusion of the solution affect-

ing sacral branches which supply the bladder and rectal wall.

Inflammatory conditions of the parametrium are considered as contra-indications, as organisms may be diffused. In all cases in which general anæsthesia is contra-indicated or is to a certain extent risky the parametric infiltration anæsthesia may be employed. Vaginal extirpation of the uterus in highly cachetic or anæmic patients is the principal indication for the method.

L. A. JUHNKE.

Robinson, W. J.: Gonorrhœa in Women. *Med. Rec.*, 1915, lxxxvii, 634.

In a general way, the author compares gonorrhœa in women and men, and gives his methods of treatment for the same.

While it must be extremely rare for a man to go through an attack of acute gonorrhœa without being aware of its presence, a woman, on the other hand, accustomed to having a leucorrhœal discharge of greater or less degree and various premenstrual pains, many of which are severer than those of gonorrhœa, may never be aware of the acute stage of the disease. A woman infected by a man suffering with chronic gonorrhœa usually has likewise a subacute or chronic gonorrhœa. While a gonorrhœal salpingitis usually comes after a matter of months, it may occur within a few hours. In an acute case the symptoms may be very severe. Where the tubes are involved the condition may simulate a general peritonitis.

In treating gonorrhœa in a female it is just as important to know what not to do, as to know what to do. If possible the infection must be kept from spreading through the internal os to the tubes, the endometrium, and the peritoneum. Once the disease has passed the internal os, the treatment is very unsatisfactory.

The general treatment of acute gonorrhœa can be expressed in one word, "rest." The woman should be put to bed for a couple of weeks. Coitus spreads the infection through the internal os and must be interdicted. The diet is not important except to omit spices, alcohol, etc.

If the urethra is involved, balsams, hyoscyamus, and the alkalies should be given. The author advises local treatment by douches and suppositories at home, and treatments applied by a physician. With the patient in the recumbent position on a douche pan, he has the patient use the douche four times a day when the discharge is profuse; as it becomes less abundant, two or three times, or even once a day is sufficient. He prefers douches either of tincture of iodine 1 to 4 drams in two quarts of hot water, lactic acid 1:500 or 1:1000, or 4 ounces aluminis, 1 ounce zinc sulphatis, 4 drams cupri sulphatis. Use 4 drams in 1 or 2 quarts of water. If the case is severe he sometimes uses a suppository at night of 4 grams protargol, or 10-gr. bacillus bulgaricus tablets. In the office he touches any inflamed or eroded vulvar or vaginal points with 10 to 50 per cent silver nitrate; he expresses from Bartholin's glands and ducts any pus they

may contain, and the ducts are injected with a 10 per cent silver nitrate solution; for the cervix, tincture of iodine alone is used, and the cervical canal is carefully treated in the same way up to about the internal os. Endometritis and salpingitis are best treated by rest, hot or cold applications to the abdomen, and tampons saturated in glycerite of boroglycerine, ichthyol-glycerine or thigenol-glycerine. Strong caustics and curettage are harmful in these conditions. Hot salt baths are good in aiding in the absorption of exudates. The author is not very favorable to the treatment of these conditions by vaccines, though he does think they may be of some value in such local conditions as salpingitis.

C. D. HOLMES.

MISCELLANEOUS

Kowarschik, I., and Keitler, H.: Diathermy in Gynecologic Diseases (Die Diathermie bei gynäkologischen Erkrankungen). *Wien. klin. Wchnschr.*, 1914, No. 47.

The authors have obtained excellent results with diathermy in various gynecologic affections. Recently they have been using lead foil as electrodes. These electrodes are placed firmly against the body anywhere and are superior to the wet electrodes. One electrode is placed over the small of the back and the other on the abdomen, or a lead-foil belt 11 cm. wide is placed around the body and a special metallic vaginal electrode is introduced into the vagina. The indication for the treatment is offered by all cases in which heat is indicated.

Diathermy acts as an absorbing agent; it should not be employed in acute processes and in the presence of pus or during hæmorrhages. The pain-relieving influence of the treatment is an important feature; only in the beginning an aggravation of the pain is seen occasionally. One advantage of the treatment is that no strain is placed upon the heart. Out of 42 cases in which it was employed only 2 were failures; in 23 cases complete cure resulted, 8 were markedly improved, and 9 were somewhat improved.

L. A. JUHNKE.

Jayle, F.: Hypophyseal Therapy in Gynecology (Die hypophysäre Therapie in der Gynäkologie). *Presse méd.*, 1914, No. 26.

The author employed methodical injections of hypophyseal extract in chronic afebrile gynecological affections, such as metritis, subinvolution with metrorrhagia, uterine sclerosis of the menopause with hæmorrhage, oöphoritis, salpingitis, etc. The immediate results were good. The pains ceased, the hæmorrhages decreased, and the general condition of the patient improved. In the author's opinion this treatment may supplant electro- and X-ray therapy.

L. A. JUHNKE.

Landsberg, E.: Two Therapeutic Suggestions for Gynecological Practice: the Administration of Calcium in Inflammatory Lesions and Extract of True Corpus Luteum Against Hæmorrhage (Zwei therapeutische Vorschläge für die gynäkologische Praxis: Kalzium gegen entzündliche Prozesse, Extrakt aus Corpora lutea vera gegen Blutungen). *Therap. Monatsh.*, 1914, May.

The author employed subcutaneous injections of a 1 per cent solution of calcium lactate in inflammatory processes of a gynecological nature. He injected 10 ccm. each time, the dose being divided and injected in several places, and repeated the injection every 2 to 3 days. Of 18 cases treated, 11 were adnexal tumors, of which 6 were completely cured and 3 still showed thickening but were symptomatically cured. Two cases were influenced favorably but later came to operation.

In a case of pelvic exudate in the front of Douglas' pouch the effect was not produced; 2 cases of parametritis reacted favorably and 4 cases of recent inflammation also. In acute cases the calcium injection alone is employed at first; later it is combined with measures for the absorption of the exudate. The substance is also adapted for vaginal irrigations in 5 per cent solution and also in the dry treatment of leucorrhœa (calcium carbonate 10 to 20 parts, zinc oxide and starch sufficient to make 200).

L. A. JUHNKE.

Newman, H. P.: Surgical Gynecology. *South. Calif. Pract.*, 1915, xxx, 71.

To correct the ordinary pathological conditions of the cervix, Newman thinks that Emmet's operation or modifications of it should be superseded by amputation of the cervix because it results in better anatomical and functional conditions. He calls the operation he performs "tracheloplasty."

After curettage the uterus is drawn down by forceps, taking their grip within the cervical canal. The posterior lip of the cervix is then transfixed by a right-angle slender knife above the diseased area and is split downward on a plane parallel with and just outside the cervical canal. The anterior lip is then split in the same manner. A wedge of tissue with the base distal is then taken from each lip, scissors being used to cut the other side of the triangular wedge. The mucous membrane of the cervical canal is then trimmed and joined to that of the vagina by three anterior and three posterior sutures. Two sutures are required on each side to close the angle. The advantages claimed for the operation are: (1) quickness of execution, (2) clean, smooth cut surfaces, (3) easy approximation, (4) avoidance of granulating surfaces and cicatrix with a certainty of a permanently patulous canal, and (5) simplicity of after-treatment.

W. H. CARY.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Zalewski, E.: Placenta Prævia and the Advantages of External Version in Its Treatment (Über Placenta prævia und die Vorteile der äusseren Wendung dabei). *Arch. f. Gynäk.*, 1915, civ, 133.

In the treatment of placenta prævia abortion is indicated only when there is severe anæmia with falling hæmoglobin content. Tamponing should be avoided on account of the danger of infection and the danger of producing abortion. Cases in private practice should be sent immediately to the hospital.

Of the various methods used in treatment the author prefers external version; it has the advantage over combined version of avoiding the chance of infection, and the advantage over metreuryisis of requiring no instruments for its execution. Moreover, rupture of both the membranes and the metreuryisis frequently has to be supplemented by other procedures. In bimanual version the placenta and cord are apt to be injured by the internal manipulations.

The author reports 45 cases in which external version was used, and 53 of metreuryisis. In the cases of metreuryisis the mortality of the children was 73 per cent, in those of external version 47 per cent.

In spite of their disadvantages and bad results, both combined version and metreuryisis must be used in some cases. Combined version is indicated in all cases where rapid delivery is necessary and possible; that is, in cases of severe hæmorrhage where the os is sufficiently dilated. Metreuryisis is to be preferred in the early months of pregnancy and in cases of very rigid and narrow cervical canal, where it is not possible to get hold of a foot. Though external version is to be preferred to any other treatment as a rule, it cannot be used after the discharge of the amniotic fluid nor where the cervical canal is so narrow that the foot cannot pass. The danger of air embolism is less in external version.

Cæsarean section is indicated only in central placenta prævia in elderly primiparæ who are especially anxious to have a living child. A. Goss.

Wyder, T.: Modern Treatment of Placenta Prævia (Über die moderne Behandlung der Placenta prævia). *Schweiz. Rundschau f. Med.*, 1915, xv, 153.

Combined version is a simple and satisfactory means of stopping hæmorrhage in placenta prævia. It should be used only by a skilled obstetrician, and as the infant mortality is very high it should

be reserved chiefly for cases where the infants are dead or not viable, or where the mother already shows severe anæmia. Metreuryisis can be carried out earlier and more easily than combined version; therefore it is recommended for the general practitioner if he is familiar with the technique and exercises the greatest care in asepsis. If the mother is in good condition and the child viable, it is to be preferred to combined version, because the danger to the child is less.

Cæsarean section should be reserved for cases where the mother wishes to undergo the operation for the sake of having a living child. It may also be considered in cases where there is early severe hæmorrhage before the os is dilated, and there is rigidity of the soft parts, rendering the conservative methods very difficult or impossible.

A. Goss.

Winn, J. F.: Treatment of Placenta Prævia. *Am. J. Obst.*, N. Y., 1915, lxxi, 583.

The author urges that every case of placenta prævia be given prompt treatment after the first hæmorrhage, with the object of emptying the uterus in the most conservative manner as soon as the case is diagnosed, whether it be during pregnancy or at labor. Early delivery saves more lives than any particular method of treatment, and has to do with the viable child as much as with the mother. Whatever plan of treatment is adopted, four great principles must be kept in mind: (1) The acceptance of the dictum that the mother's life is more to be considered than that of the child, (2) the keeping of blood loss to the minimum, (3) the prevention of infection, (4) the making of ample provision for meeting all emergencies likely to arise.

If diagnosed during pregnancy and before the child is viable, the patient being either in the home or the hospital, one should do a Braxton-Hicks version, but if the child is viable and in good condition a large sized Voorhees bag should be passed within the sac and the child delivered by version after the cervix is dilated. In those cases of marginal or lateral insertion, with a partial dilatation of the cervix attended by slight bleeding, puncturing the membranes is usually sufficient to stop the bleeding.

It cannot be denied that cæsarean section has a restricted place in complete placenta prævia, and in some cases of the partial variety. The author believes it should be chosen under the following conditions: with the approach of full-term; when the placenta covers a great part or the whole of the os; when the hæmorrhage is profuse but not profuse enough to make the mother a bad surgical

risk, the child probably weakened yet offering reasonable prospects of being saved; when the cervix is in a condition suggestive of prolonged and difficult dilatation; when there is a negative history of vaginal contamination; and when there is the assurance of hospital technique being used.

C. H. DAVIS.

Fursey, F. E.: Difficulties in Diagnosing Ectopic Pregnancy. *Northwest Med.*, 1915, vii, 80.

The conditions from which ectopic gestation must be differentiated are: (1) incomplete uterine abortion; (2) ovarian cyst, especially when the pedicle is twisted; (3) appendicitis; (4) salpingitis, especially of gonorrhoeal origin; and (5) pedunculated uterine fibroid.

In abortions the bleeding is more free, more clotted, and ceases when the uterus is emptied. There is no extremely sensitive pelvic tumor.

In ovarian cyst the symptoms are of slower onset, menstruation is irregular, and the pelvic tumor is more freely movable and not so sensitive.

In appendicitis there are no symptoms of pregnancy and the pain is higher in the abdomen.

Salpingitis is likely to be double and is of longer duration.

In uterine fibroid the menstruation is regular but increased in amount and there is no pain.

Early operation is advised. D. H. BOYD.

Oden, R. J. E.: Ectopic Pregnancy Twice in the Same Patient Within Five Months. *J. Mich. St. M. Soc.*, 1915, xiv, 104.

The patient, a housewife, age 28, the mother of two healthy children, 7 and 4 years of age, experienced a sudden sharp pain in the right pelvis, followed by collapse. The pulse was rapid, breathing labored, but there was no rise in temperature. There was rigidity of the right rectus and tenderness over McBurney's point.

At operation free blood was found in the pelvis. The tumor, a right tubal pregnancy, ruptured in the middle one-third, was removed. The opposite tube, apparently normal, was left at the request of the husband. Upon examining the appendix it was found to be gangrenous and was removed. The patient made an uneventful recovery and left for her home in three weeks.

Five months later she was again taken to the hospital. The day previous she had suddenly experienced symptoms identical with those of five months before, except that the pain was on the opposite side. A second operation was performed. Her condition was very critical; the hæmorrhage had been free and had not subsided, although an interval of 36 hours had elapsed from the onset. Her pulse was rapid and weak, respiration labored, and other evidences of shock were present. As soon as the ruptured vessel had been located and tied a saline transfusion was administered. The tubal pregnancy, ruptured in the middle one-third, was removed. Veil-like layers of fibrin, probably from

the free blood, were found uniting the bowels and pelvic organs. These were easily broken with the gauze-covered thumb, and the abdomen was flushed with a saline solution.

After six uneventful days she developed post-operative ileus. As medicinal measures were of no avail, the abdomen was reopened and the bands of adhesions loosened. The immediate results were satisfactory, but three weeks later the condition recurred. While these repeated operations were far from pleasant to the patient, no other course was justifiable. Her condition was very bad, but she rallied from this, her fourth operation, within the course of seven months, and proceeded toward a further uneventful recovery.

EDWARD L. CORNELL.

James, J. E.: Some Clinical Suggestions Concerning the Diagnosis and Management of Extra-Uterine Pregnancy. *Hahneman. Month.*, 1915, 1, 161.

The etiologic factors in tubal pregnancy are: (1) inflammatory condition of the tube; (2) mechanical factors; (3) embryological and developmental causes.

The termination is either tubal abortion (most frequent) or tubal rupture. The cardinal guide in the diagnosis of an extra-uterine pregnancy would be a relative period of sterility followed by irregularity in menstruation, pelvic distress or intermittent pain in the lower abdomen with the usual early signs of a normal pregnancy, softening, enlarged uterus, etc.

In a differential diagnosis the things to consider are: (1) pelvic inflammatory states; (2) ovarian tumors; (3) pregnant uterus, plus cervical polyp; (4) threatened abortion or incomplete abortion; (5) double uterus — pregnancy in one horn.

In treatment, abdominal section as soon as the diagnosis is made is the rule. In ruptured cases in a moribund condition shock should be combated first and section done later. This is regarded as giving the best chance for recovery, as the collapse is considered to be due to the sudden large hæmorrhage with the rupture, the later hæmorrhage being slight and tending to subside. D. H. BOYD.

Primisar, F.: Two Cases of Isochronic Heterotopic Twin Pregnancy (Zwei Fälle von isochroner, heterotoper Zwillingschwangerschaft). *Gynäk. Rundschau*, 1914, viii, 203.

The author reports two cases of simultaneous extra-uterine and intra-uterine pregnancy. The first case was an ovarian pregnancy, isochronic with a uterine pregnancy. The ovarian pregnancy was diagnosed correctly and operated upon and the uterine pregnancy suspected at the time.

The second case was a pregnancy in the isthmus of the tube and rupture of the same. The case was immediately operated. The uterine pregnancy in this case was recognized only after it terminated in abortion.

In both cases the uterine pregnancy terminated a few weeks after operative removal of the extra-uterine pregnancies. Both patients were discharged cured. The size and duration of the extra-uterine pregnancy in each case corresponded with the intra-uterine pregnancy, so it is highly probable that in each case two ova of the same ovulation period were fertilized at the same time. L. A. JUHNKE.

Pfaff, J. A.: Eclampsia; Acute Mania; Cæsarean Section. *Indianapolis M. J.*, 1915, xviii, 105.

The author reports a case of eclampsia in a primipara, aged 41, treated by cæsarean section. The duration of pregnancy was seven and one-half months. After being in a normal condition, the patient was suddenly seized with epigastric pain and vomiting; this was followed shortly by convulsions and a blood-pressure of 210. Abdominal cæsarean section through a low incision was done. The baby was toxic, revived with difficulty and only lived six hours. The patient had no more convulsions but went immediately into a condition of acute mania, talking and raving incessantly; she remained in this condition for five days, at which time her mind began clearing up. This condition was treated by large and often-repeated doses of chloral, sodium bromide and morphia. Hyoscine seemed to exaggerate the case. Pfaff is of the opinion that this case illustrates a good indication for cæsarean section. WILLIAM D. PHILLIPS

Oliver, J.: New Aspects of Eclampsia and Its Treatment. *Practitioner*, Lond., 1915, xciv, 416.

The intoxication in eclampsia results from the intermediary, not the end-products, of nitrogenous metabolism, and from the retention of these intermediary products in the nerve and muscle cells, because there is an insufficiency of the requisite mineral substances circulating in the body of the mother to satisfy her own needs and those of her infant *in utero*.

The food of the eclamptic has been deficient in mineral substances, especially phosphorus and calcium. The fœtus derives its nutriment and mineral substances from the food materials which have been assimilated and rendered fit by the liver and lungs for the maternal circulation. The embryonic tissue has a greater avidity than the maternal tissue for mineral substances, such as phosphorus and calcium. Consequently the fœtus takes up these substances to the detriment of the maternal organism, with resulting inadequate fulfillment of the processes of metabolism.

Phosphorus is necessary for the oxidation of proteid material in the living organism. If the fœtus takes up the available phosphorus its content in the maternal organism is lowered, the formation of urea is diminished, and the intermediary products of metabolism accumulate in the nerve and muscle cells, resulting in auto-intoxication and a change in the irritability and reaction of the nerves and muscles which may give rise to convulsions.

To prevent eclampsia the diet should contain an abundance of mineral substances, especially so if the patient has headache and lassitude even without albuminuria. D. H. BOYD.

Plass, E. D.: The Significance of the Non-Coagulable Nitrogen Coefficient of the Blood Serum in Pregnancy and the Toxæmias of Pregnancy. *Am. J. Obst.*, N. Y., 1915, lxxi, 608.

The author describes in detail the technique of the determinations and draws the following conclusions: The non-coagulable nitrogen coefficient is a better index of kidney function than the total non-coagulable nitrogen alone. In toxæmias of pregnancy and in eclampsia the non-coagulable nitrogen coefficient seems to be of some value in prognosticating the degree of permanent kidney change and in differentiating renal from hepatic toxæmias. Possibly, if the non-coagulable nitrogen were determined in other renal disorders, not especially connected with pregnancy, additional information might be obtained which would increase the clinical and prognostic value of the test.

C. H. DAVIS.

MacLean, H. S.: Indications and Technique for Cæsarean Section. *Virg. M. Semi-Monthl.*, 1915, xix, 573.

In considering indications for cæsarean section the following points should be borne in mind:

1. The value in time saved and a prompt emptying of the uterus.
2. The avoidance of cervical, vaginal, and perineal contusions and lacerations incident to efforts at rapid delivery.
3. The infantile mortality is lower in cæsarean section.

The author performed section in 8 cases of eclampsia, 5 cases with contracted pelvis, and 2 cases of persistent faulty presentation.

The following points in the operative technique are emphasized:

1. Complete delivery of the uterus, with the abdominal cavity thoroughly walled off by a large number of linen towels.
2. Whenever possible, and it usually is, the placenta, membranes, and fœtus should be removed *en masse* from the uterine cavity. When this is done, the mass is rolled off the patient's abdomen into the hands of an assistant with a surprisingly small amount of spilling of the amniotic fluid and consequent diminution in the danger of peritoneal soiling. The uterus is of course kept covered with saline towels.
3. A very large drainage tube is always passed down through the cervix and vagina, the upper end of it being stitched to the cervical mucosa by a catgut suture. In cases where labor has not started before the operation it is sometimes necessary to dilate the cervix, but this is quickly and easily done with the uterine dilator.
4. Three rows of catgut sutures are used to close

the uterine incision. These are usually continuous, although the middle row may be interrupted. The peritoneal line of sutures should be very carefully placed so as to get accurate approximation.

D. H. BOYD.

Kunreuther: The Method of Interruption of Pregnancy and Simultaneous Sterilization in Pulmonary Tuberculosis (Über Methodik der Schwangerschaftsunterbrechung und gleichzeitiger Sterilisation bei Lungentuberkulose). *Berl. klin. Wchnschr.*, 1914, No. 37.

On the basis of the statistics obtained during the last decade, the former conservative treatment of the phthisical pregnant woman should be discontinued. In cases in which an aggravation of the pulmonary process by the pregnancy is suspected from previous pregnancies, according to the judgment of a competent internist, and has already set in, the indication for operative interference exists, at least so far as the woman is concerned who has one or more living children. As the early induced abortion does not prevent future conception in the tuberculous woman, and since the abortion does not check the progress of the pulmonary process and in many cases leads to menorrhagias, it is therefore advisable to perform sterilization immediately after the evacuation of the uterus.

The author recommends his own method, which he performed in twelve cases; i.e., the abdominal supravaginal amputation of the pregnant uterus, leaving the adnexa. Its advantages are the avoidance of the aggravation of the pulmonary process and menorrhagia so common after evacuation of the uterus, absolutely certain sterilization, mild menopause symptoms, positive asepsis, slight hæmorrhage, complete supervision of the operative field, and the possibility of recurring diseased adnexæ or appendix.

L. A. JUHNKE.

Landau, L.: Myoma and Pregnancy (Myom und Schwangerschaft). *Berl. klin. Wchnschr.*, 1914, No. 31.

The author classifies myomatosis uteri gravidi into four clinical categories as follows:

1. Myomata which produce no symptoms during pregnancy and with which no complications are expected during labor should receive no treatment.

2. Myomata which produce severe symptoms during pregnancy should be enucleated if possible and the pregnant uterus disturbed as little as possible. Of 14 cases of myoma which the author enucleated, 13 continued the pregnancy to term.

3. Myomata which produce no symptoms during pregnancy but which are suspected of producing complications at labor should be subjected to cæsarean section at term or during the onset of labor, followed by subtotal or total hysterectomy.

4. In myomata in which the continuation of pregnancy threatens the life of the patient, abortion should not be induced, as it is too dangerous and technically difficult and subjects the patient

to the danger of another pregnancy. The author advises hysteromyomectomy uteri gravidi totalis or subtotalis. Of 31 cases operated upon by the author there were no fatalities.

L. A. JUHNKE.

Grad, H.: Multiple Fibroids of the Uterus Complicated by Pregnancy. *N. Y. M. J.*, 1915, ci, 671.

The author states that fibroid tumors of the uterus may lie dormant in the walls of the organ for many years, giving rise to no objective or subjective symptoms. The health of the patient suffers in no way whatsoever. The menstrual function may be normal in every way, and there may be no local symptoms, such as tenderness to touch, or even vague discomfort. When pregnancy occurs in a uterus which has harbored these benign, dormant, symptomless neoplasms for a long time, a factor is introduced which may turn an absolutely benign pathological process into a malignant entity.

For purposes of clinical observation he mentions two groups: (1) multiple fibroids of the uterus complicated by pregnancy, and (2) pregnancy complicated by fibroids. The author considers the first condition very serious and quotes Susserot as giving a mortality of 55 per cent in 147 cases and Pozzi a mortality of 55 per cent. The seriousness of these cases does not arise from the fact that pregnancy is terminated early, but because it brings about pathological changes in the neoplasms. These changes are mostly of a gangrenous character. This gangrenous process may not be confined to the neoplasms themselves, but may involve the endometrium as well.

Grad is of the opinion that a uterus with multiple fibroids complicated by pregnancy is as serious as a malignant tumor and should be surgically extirpated, whereas a gravid uterus complicated by fibroids allows a wider latitude of management.

W. D. PHILLIPS.

Bovée, J. W.: A Case of Chorio-Epithelioma Malignum Complicating a Two-Months' Pregnancy and a Degenerated Uterine Fibroma. *Surg., Gynec. & Obst.*, 1915, xx, 405.

The patient, a white woman 41 years of age, married 18 years, had given birth to two children, now aged fifteen and fourteen years, respectively. She had had but one other pregnancy, and that resulted in an induced abortion at six weeks' gestation thirteen years ago.

Her menses had been painless, normal in amount, and regular until May 22, 1914, and had lasted three days with no special feature. The May period was delayed a few days, but lasted three days. In June it was delayed, but lasted three days; in July it was a little delayed, but notable in no other way except that it was the last period before the author saw her September 25, the day before operation. During the last two months she had suffered from frequent micturition and from August 25 to September 25 from vomiting and purging without it especially occurring in the morning.

An abdominal tumor in the left lower quadrant of the abdomen had in the meantime become very painful and pregnancy was also suspected.

At operation a necrobiotic fibroid extending from the pelvis up to the umbilicus and the uterine body containing a foetus thought to be of six weeks' development were removed.

The pathologist's report on the uterus and gestation was that a malignant chorio-epithelioma had begun in the chorion and had invaded the uterine muscle at but one point, and that no metastasis could be found.

The cervix was removed October 14, and was searched in vain for metastases. Upon examination of the patient December 14, 1914, no evidence of the disease in the pelvis was found nor were any symptoms of metastases in the lungs or other structures present.

Bovée regards her case as originating from the coincident pregnancy, probably the earliest operated upon, if not the earliest known, peculiar for having been without the usual symptoms and for having been found only accidentally because of routine examination of removed tissues.

Bovée recommends radical operation whenever possible to remove the primary focus, if in the uterus or ovary, and even removal of the metastases, particularly of the vagina.

Davis, E. P.: Tubercular Infection Complicating Pregnancy, Parturition, and the Puerperal State; a Consideration of Its Bearing on Treatment. *Therap. Gaz.*, 1915, xxxix, 153.

The first half of the author's paper comprises a general review of tuberculous infections of the genito-urinary tract, its relation to pregnancy, and its subsequent effect upon the offspring.

The two practical questions which arise concerning the treatment of tuberculous patients are: (1) What is the duty of the physician when the woman who has had a tuberculous infection which is quiescent becomes pregnant? (2) Shall the pregnancy be allowed to continue or must it be interrupted?

If the patient aside from her preëxisting tuberculous infection is sound and in comfortable circumstances, intelligent, and with sufficient self-control to care for her health, she may go through pregnancy under accurate observation at her own risk. However, if signs of renewed tuberculous infection appear, pregnancy must be terminated immediately. When a patient who is in active tuberculosis becomes pregnant, or is just holding her own against a circumscribed infection, the author favors immediate termination of the existing pregnancy.

The best results in such cases are obtained by opening the abdomen, using spinal anæsthesia if possible, excising the fallopian tubes completely, opening the uterus transversely, and removing the ovum with the gloved finger. A. H. SCHMITT.

Funk, E. H.: The Relationship of Tuberculosis and Pregnancy. *Therap. Gaz.*, 1915, xxxix, 158.

After briefly reviewing the recent literature on the subject, the author analyzes the obstetrical histories of 100 tubercular women, with a consideration of the effect of the disease upon the pregnancy, of the pregnancy upon the disease, and the effect of the disease as shown in the offspring. He comes to the conclusion that the tubercular woman should be advised against marriage and conception, and that pregnancy occurring in one with an active lesion should be promptly terminated. The methods of accomplishing this call for the judgment of the experienced obstetrician. Even in the presence of an apparent cure the occurrence of pregnancy entails a risk, which in the majority of instances should not be taken. In the individual case the presence of a good family and personal history, an early lesion, and means and willingness to undergo treatment make it reasonable to expect a cure. Even in a case considered as cured pregnancy must be considered as a risk and should be undertaken only with competent medical supervision during the entire period of gestation and the maintenance of a most favorable hygienic régime.

PHILIP F. WILLIAMS.

Amann, J. A.: Rupture of the Bowel Due to Blunt Force During Pregnancy (Darmruptur durch stumpfe Gewalt bei Gravidität). *Monatschr. f. Geburtsh. u. Gynäk.*, 1914, xl, No. 6.

During the action of circumscribed blunt force applied to the abdomen, a crushing of the bowel against the spinal column or against the pelvis usually takes place. In diffusely acting force, a loop of the bowel may burst. Non-perforating lesions may lead to secondary perforation later. In perforating lesions the bowel musculature contracts almost immediately and the swollen mucous membrane penetrates through the opening.

The author reports the case of a 35-year-old pregnant woman who fell from a chair placed on a table to the floor, striking her right side against a corner of the back of the chair. Severe pain in the lower abdomen immediately followed. A few hours later there was a slight hæmorrhage from the vagina. On the seventh day the diarrhœa which set in on the first day ceased suddenly, and fœcal vomiting commenced. At the operation on the eighth day a general peritonitis and an abscess in the small pelvis was found. A loop of bowel was found there showing a small perforation, through which a plug of mucous membrane had become united to the serosa and had effectually closed the perforation. A preternatural anus was made at the site of the perforation. The following day the child and placenta were expelled. Recovery followed.

Amann believes that in this case a perforation of the bowel probably occurred at the time of the injury; an abscess developed in the small pelvis and from the breaking of the abscess a general peritonitis

occurred. The peritonitis undoubtedly was responsible for the interruption of pregnancy.

Peritonitis or ileus are now considered indications for immediate laparotomy, even in the presence of pregnancy.

L. A. JUHNKE.

Franz, R.: Pyelitis in Pregnancy (Über die Nierenbeckenentzündung der Schwangeren). *Med. Klin.*, Berl., 1915, xi, 190.

It is commonly assumed that the pyelitis of pregnancy does not require any special treatment, but Franz contends that this is wrong. In the milder cases the symptoms may subside without active measures, but whether or not the lesion has healed is another question, and time often proves that it has not. Severe pyelitis, on the other hand, is always dangerous for both mother and child. Opitz found that in 40 per cent of such cases there was premature delivery. The focus in the kidney pelvis is liable to breed puerperal fever or spread and involve the kidney proper, with or without pyonephrosis and concretions.

Treatment should be conservative at first, including copious drinking and the administration of salol or methylene blue if the urine is acid, and of urotropine, boric acid, etc., with alkaline urine, supplemented by local disinfection of the bladder and lying on the sound side to promote the emptying of the kidney pelvis. If the clinical manifestations do not subside promptly under this, then a retention catheter should be introduced into the ureter and the kidney pelvis rinsed out with a silver salt solution; interruption of the pregnancy or nephrotomy should be used as a last resort. The pyelitis must not be regarded as cured until bacteria and pus can no longer be found in the urine; direct disinfection of the kidney pelvis through the ureteral catheter generally accomplishes this.

A. Goss.

Watson, B. P.: Pyelitis as a Complication of Pregnancy and the Puerperium. *Canad. M. Ass. J.*, 1915, v, 190.

The author at first directs attention to the etiology and symptomatology of pyelitis and then outlines his method of treating this complication.

Regarding the etiology he believes that ureteric dilatation is an important factor in the production of this disease. Such dilatation with stagnation of urine favors the invasion of the kidney and ureter by organisms carried in the blood stream or conveyed by the lymphatics from other organs, such as the intestines. These routes are more common than the ascending one from the bladder. The infecting organism is of the nature of those belonging to the coli group, and it has been shown that obstinate constipation favors the invasion of the lymphatic or blood stream by the bacillus coli.

The initial symptoms which usually occur during the latter half of pregnancy are sometimes acute, at other times insidious; but in nearly all cases, even from the beginning, there is distinct renal

tenderness elicited on deep palpation. This, together with increase of pulse rate, rise in temperature, and the presence of pus in the urine, are the important symptoms.

The four main lines along which treatment may be directed are: (1) the administration of a urinary antiseptic, such as urotropin, grains ten, thrice daily; (2) the administration of alkalies, such as potassium citrate, fifteen grains every four hours; (3) the use of vaccines; (4) catheterization of the ureter and the flushing out of the pelvis of the kidney or the application of some germicide to it. This latter method is recommended only when the others have failed.

The author believes that in only rare instances is it necessary to terminate the pregnancy or to interfere surgically with the kidney.

A. H. SCHMITT.

Calmann: Pyelitis of Pregnancy Treated with Pelvic Irrigation (Pyelitis in der Schwangerschaft, die mit Nierenbeckenspülungen erfolgreich behandelt wurden). *Zentralbl. f. Gynäk.*, 1915, xxxix, 137.

The author publishes two cases of pyelitis of pregnancy successfully treated with irrigations of the renal pelvis. Both cases were extraordinarily severe, with high fever curves, numerous chills, and vomiting spells, in which the internal treatment had absolutely no effect. Irrigations of the renal pelvis, however, resulted in prompt improvement. These two cases followed eight others, milder in character, with no or only an occasional chill, which responded to the internal treatment alone. In a former communication the author reported nine cases, in three of which irrigations of the renal pelvis were necessary. He therefore believes that only in severe cases in which the internal treatment fails is it necessary to employ irrigations of the pelvis. In both of the cases the disease was bilateral, contrary to most cases, in which only a right-sided pyelitis occurs.

The origin of the pyelitis of pregnancy, according to recent investigations, is not always due to compression of the ureters by the enlarged uterus and followed by congestion in the renal pelvis; probably as frequently it is due to organisms from the bladder or bowel reaching the pelvis either by the blood or lymph stream. Kermauner believes that the pyelitis of pregnancy is due to an exacerbation of an old pyelitis during childhood.

L. A. JUHNKE.

Wolff, P., and Zade, M.: Diagnosis and Prognosis of Kidney Changes During Pregnancy (Zur Diagnose und Prognose der Nierenveränderungen in der Schwangerschaft). *Zentralbl. f. Gynäk.*, 1915, xxxix, 154.

Several clinical pictures are clearly defined, especially the nephropathia e graviditate in the acute and gradually developing form on the one hand, and the genuine kidney inflammations, to which pregnancy is added — nephritis in graviditate — on the other hand. Transitional forms, of course, are

common. Considerable variation exists in regard to nomenclature. The authors adopt that of Aschoff, Zangemeister, and others.

The clinical differentiation between an acutely developing nephropathy and an acute nephritis during pregnancy is frequently impossible. Etiologic factors may aid somewhat. Blood-pressure determinations are only of limited value. The acute nephropathy shows rise in blood-pressure of only moderate extent. In eclampsia the authors found that the blood-pressure increased to 170 or 180 cm. water. Acute nephritis usually shows no increase. Changes in the fundus of the eye are also observed in pure nephropathies and eclampsia.

In the differential diagnosis between chronic nephropathy and chronic nephritis, the latter is characterized by cardiac hypertrophy, the rise in blood-pressure being accompanied by a lowered specific gravity of the urine.

The authors observed a rise in blood-pressure in most nephropathies, never reaching above 200 cm. water; in most all chronic nephritides, however, the pressure rose above 200 cm. water.

A true chronic nephritis may later develop from a nephropathia e graviditate and eclampsia. Several cases are mentioned.

The nephropathia e graviditate predisposes to recurrence during late pregnancies.

In chronic nephritis during pregnancy, the appearance of albuminuric retinitis is not of such grave prognostic importance as it is outside of pregnancy. The retinitis may be due to a nephropathy complicating the nephritis and may disappear completely after delivery. During the five years covering this report of 31 cases with chronic nephritis, 5 died either during pregnancy or during the puerperium. Of the 31 children born, only 7 left the clinic alive.

A. L. JUENKE.

LABOR AND ITS COMPLICATIONS

Slemons, J. M.: *Dystocia Due to a Funnel Pelvis.* *Calif. St. J. Med.*, 1915, xiii, 91.

The author reports a case of outlet dystocia and gives a brief discussion of funnel pelvises.

The case reported was that of a multipara whose two previous labors had been terminated by forceps. The pelvic inlet was contracted anteroposteriorly, the estimated true conjugate 9 cm. The outlet was that of a funnel pelvis: bituberal 6.5 cm., anterior posterior 12 cm., anterior sagittal 6 cm., post sagittal 10.25 cm.

After three hours in the second stage, the head appeared at the outlet, but in spite of good contractions it failed to advance, and one hour later was delivered by low forceps. Observations made during the extraction showed the distance from the occiput to the symphysis to be 6 cm. when the head was well engaged in the outlet.

In discussing this case the author calls attention to the compensating effect of the posterior sagittal when the bituberal is contracted. As most of the

suboccipitofrontal diameter of the fetal head (10.5 cm.) passed posterior to a line joining the ischial tuberosities, a posterior sagittal shorter than that which occurred in this case (10.25 cm.) would have materially increased the dystocia.

He also points out the need of more care in estimating the size of the outlet at the time of the antepartum examination, calling attention particularly to the bituberal and posterior sagittal diameters.

In considering the treatment of funnel pelvis he states that in cases of moderate contraction, i.e., bituberal 7 cm. or over, delivery is usually effected by placing the patient in the lithotomy position with the thighs drawn up toward the abdomen.

Pubiotomy is the procedure advocated in cases of more marked contraction. By this method the transverse diameter is increased from one to three centimeters, and thus becomes normal. In addition, as a result of the fibrous union the outlet is permanently enlarged. Cæsarean section is advised when the contraction is extreme or when it occurs in an elderly primipara.

A. C. BECK.

Fouche, F. P.: *A Case of Complete Rupture of Uterus During Labor.* *So. African M. Rec.*, 1915, xiii, 20.

The author was called to perform an autopsy on a woman 30 years of age who had been in labor for 28 hours. On opening the abdomen a large collection of blood was found in the left side. The left arm of the fetus, as far as the shoulder, protruded through an opening in the uterus. The rupture was situated in the lower uterine segment toward the posterior side a little to the left of the median line. The left uterine artery had also been torn. The tear was in a longitudinal direction and was about three and a quarter inches long. The pelvis was uniformly contracted in all directions and the author found it impossible to pass the closed fist through the inlet. No pathological lesions were present in the uterus or in any other organ. The bladder was so enormously distended with urine that it was as large as the gravid uterus.

EDWARD L. CORNELL.

Douglas, S. W.: *The Relief of Uterine Inertia.* *J. Arkansas M. Soc.*, 1915, xi, 240.

A number of simple and practical measures for accelerating the progress of labor in long, tedious, but otherwise normal cases are discussed. Weak, infrequent pains and those of short duration are held as the principal causes of delay in the first stage. Here the author uses strychnia, hot coffee, castor oil, hot sitz baths, and hot soapsuds enemas. For weak and relaxed abdominal walls tight binders may assist. Slight narcosis in timid women has been found of advantage. Quinine has been discarded because of the nausea it produces and on account of troublesome post-partum bleeding. The exaggerated lithotomy posture seems to favor advance of the head. The reflex stimulation from

vaginal and cervical dilatation may increase the pains.

In the second stage pituitrin used judiciously is a valuable adjunct but does not entirely supplant the use of forceps. The author comments on the scarcity of contra-indications mentioned in discussions of the action of this drug, and he cites two typical failures in its use. Mild narcosis apparently has no effect upon the expulsive force of the pains or contractions produced by pituitrin. The author suggests that a minimum number of vaginal examinations and a maximum of abdominal palpations and estimations be the rule in estimating the progress of long-drawn-out labors to minimize the danger of infection.

PHILIP F. WILLIAMS.

Bell, J. F.: Pituitrin in Thirty Cases of Labor.
Internat. J. Surg., 1915, xxviii, 122.

Bell reports the successful use of pituitrin in thirty cases of labor. He usually uses it after the second stage has developed; however, if the first stage is long and threatens much worry to the patient, he uses it then and, if indicated, repeats the injection in one hour. He says that he has never had to deal with after-pains or post-partum hæmorrhage in a single case since he has been using pituitrin. As a means of hastening delivery in eclampsia he has found it is very valuable. W. D. PHILLIPS.

Quigley, J. K.: Pituitary Extract in Obstetrics.
J. Am. M. Ass., 1915, lxiv, 1222.

In a series of 50 cases, there were 7 failures and 3 partial successes, or 86 per cent of successes. Among the cases were 2 of incomplete abortion; 2 of induction in conjunction with hydrostatic bags; 2 of placenta prævia; 2 of cesarean section; 2 of puerperal metrorrhagia, and 1 in which the extract was used as a galactagogue. The balance, cases of inertia, chiefly secondary, included one breech and several occiput posterior cases. In the 7 classed as failures it was necessary to resort to forceps delivery.

In pituitary extract we have the most powerful stimulant to uterine contraction yet discovered. Its greatest value is its use in uterine inertia. The ideal time for its exhibition is in the second stage, although good results follow its employment earlier; in these cases it is usually necessary to repeat. No untoward results, such as post-partum hæmorrhage or asphyxia, were noted in mother or child in the 50 cases.

Pituitary extract shortens the third stage; it renders catheterization post-partum almost unnecessary; it has no place in the normal case. Preparations for delivery should be made at the time of injection, such as sterilizing hands and gloves. The facilities for giving an anæsthetic at a moment's notice are prerequisite, for the susceptibility of the uterine muscle in any particular case is not known. Pituitary extract may advantageously be supplemented by seminarcosis when the presenting part is on the perineum. This would naturally mean chloroform, ether, or pituitary extract.

Nitrous oxide is contra-indicated in scopolamine narcosis. Pituitary extract must be used judiciously and with a due appreciation of the possible dangers of so powerful a uterine stimulant. This is the most important point.

EDWARD L. CORNELL.

Webster, J. C.: Nitrous-Oxide Gas Analgesia in Obstetrics.
J. Am. M. Ass., 1915, lxiv, 812.

During the past year nitrous-oxide gas has been used in labor to abolish the pains caused by uterine contractions, and it has been completely successful in relieving women of the sufferings of childbirth. The technique is very simple. Usually the administration is begun when the patient complains of second-stage pains, although it may also be used during the first stage. In the majority of cases, however, gas is not necessary during the greater portion of this period. It is very important that women should not be educated to regard labor as a terrible experience, something akin to a surgical operation, necessitating the free use of anæsthetics. The large proportion of patients suffer comparatively little severe pain. Very often the support and encouragement of a judicious physician or nurse have a marked effect in subduing nervousness and distress. The apparatus is that ordinarily employed by dentists.

It has been found best to use a small nasal inhaler, the mouth of the patient being uncovered. The gas-bag attached to the tank is kept under low pressure, and as the pain begins the patient is instructed to breathe quietly, keeping the mouth closed. Ordinarily light inhalation suffices to produce the analgesic effect. It is not necessary to cause asphyxiation or jactitation, which are due to the inhalation of large quantities of gas. Expulsive efforts on the part of the patient are not interfered with to any appreciable extent. As soon as the uterine contraction begins to subside, the inhaler is removed and the patient again becomes conscious. This procedure may be kept up for hours if necessary. A nurse or assistant may be instructed to carry out the administration satisfactorily.

Pure nitrous-oxide gas or gas with oxygen—3 per cent—may be employed. The former is, perhaps, most universally applicable. It may be used in private houses as well as in hospitals, the necessary apparatus being small, compact, and easily transported. The amount of gas varies according to the duration of painful contractions, and the cost is, therefore, a variable factor.

Its advantages are as follows:

1. The apparatus is simple, easily transported, and may be used by any practitioner.
2. Deep anæsthesia is not necessary.
3. There are no ill effects to mother or child.
4. The strength of uterine contractions is not diminished, no matter how long the administration of the gas is continued.
5. The administration is under control all the time and can be stopped at any moment. This

is a very decided advantage which is not possessed by any method which necessitates placing a patient under the influence of drugs administered internally.

EDWARD L. CORNELL.

Druskin, S. J., and Ratnoff, N.: Twilight Sleep in Obstetrics; a Report of 200 Cases. *N. Y. St. J. Med.*, 1915, xv, 146.

The history, chemistry, and action of scopolamine and narcophin are discussed. The author's technique is as follows:

The two drugs are put up as follows:

Solution 1. Narcophin, 3 per cent; aqua chloroform, quantum sufficit.

Solution 2. Scopolamine hydrobromide, 3 per cent; mannit, 10 per cent; aqua destillata, quantum sufficit.

The treatment is begun as soon as the pains occur at regular intervals and discomfort is felt. The first three injections are given at intervals of three-quarters of an hour; subsequent injections are given every hour and a half. Memory tests are regularly made to determine the condition of the patient, and the authors are guided more by the patient's amnesia than by the intervals elapsing between injections. Half the original dose of narcophin is repeated every six hours. If given at shorter intervals, oligopnœa bordering on asphyxia of the child may develop.

Their results with 200 cases were: 166, or 83 per cent, had complete amnesia; 17, or 8.5 per cent, had marked analgesia without amnesia; 17 had no amnesia and but slight if any analgesia in 2 cases, or 1 per cent, because treatment was discontinued; in 15, or 7.5 per cent, because labor was too far advanced for effective treatment (mostly multiparæ) or because of some idiosyncrasy.

Their results have improved considerably since the introduction of narcophin as a substitute for morphine. They are as follows: 1 stillbirth, with slightly macerated skin; 3 cases of asphyxia, one of which was resuscitated after twenty minutes; another died of œdema of the glottis after twelve hours, and the third died after one and one-half hours, due to faulty development. One hundred and sixty-eight were normal children under no influence of drugs. Thirty, or 14.7 per cent, were born under the influence of the drugs and were oligopnœic.

Interference was required 23 times. In one case there was a breech extraction. Medium forceps were used in 4 cases, or less than 2 per cent; low forceps were used in 18 cases, or less than 9 per cent. This includes 2 cases in which forceps were used on account of excessive uterine contractions, following the use of pituitary extract. Lacerations of the perineum were strikingly reduced both in number and degree. In 200 consecutive cases, 75 per cent of whom were primiparæ, there was only one severe laceration of the perineum. Hæmorrhage was conspicuous by its absence. The conclusions are:

1. The treatment is safe, both for mother and child.

2. The treatment is especially to be recommended for primiparæ. Not only does it save them the agony of a difficult labor, but it also protects them

against unnecessary interference on the part of the physician, due to the pleadings of the patient and family.

3. In multiparæ, it is a question whether a rapid labor brought about by the administration of minute and repeated doses of pituitary extract, and the pangs of labor relieved by a dose or two of narcophin, are not to be preferred. However, this should be left for the patient to decide.

4. The treatment is best carried out in a hospital where there is a staff trained in the technique.

5. In private practice, it resolves itself into a question of finances. The surroundings must be favorable. A trained nurse, experienced in the treatment, is a requisite. It is also advisable to have a medical assistant as well as an assistant nurse. The physician in charge must be within reach. His compensation must be commensurate with the services rendered.

6. The treatment does not render the care, attention, and watchfulness on the part of the attending physician less, but rather increases his labors and makes his work more difficult and complicated and his responsibilities greater.

7. Fœtal heart sounds must be watched carefully and the pulse and respiration of the mother, as well as her general condition, including her state of consciousness, must be observed constantly.

8. The method is not adapted for the general practitioner, but should be practiced only by those who devote themselves to obstetrics.

9. It should be practiced only by those who have watched a fair number of cases, say ten, from beginning to end, and have thoroughly familiarized themselves with the practical points in the treatment.

10. It may develop anæsthetists specially trained in the administration of the treatment.

11. Pured rugs are indispensable, and attention to all details in the management of a case is essential.

12. Anomalies of labor do not interfere with the treatment, and all minor and major operations may be carried out while the patient is under the influence of the drugs, with or without the addition of inhalation anæsthesia.

In conclusion, the authors add that the more intelligent, the more refined, and the more cultured the woman the more readily does she come under the influence of the medication, the less does she require of the drugs and the more satisfactory is the result and the more appreciative is the patient.

EDWARD L. CORNELL.

Bollag, K.: Novocaine Anæsthesia in Normal Labor (Klinische Erfahrungen über Novokainanæsthesie bei normalen Geburten). *München. med. Wchnschr.*, 1915, lxii, 256.

Bollag anæsthetizes the pudic nerve by the injection of 5, or in some cases 10, ccm. 2 per cent novocaine-suprarenin solution. This does away with the pain due to stretching of the parts without interfering with the force of the contractions. He has used the method in 225 cases. Anæsthesia

takes place 5, or at most 10, minutes after the injection and persists for two, or in some cases three, hours. The anæsthesia was a failure in only 7 cases, and that was due to its having been given too late. The injection should be made at the beginning of the bearing-down pains of the second stage. It does away with the stretching pains of the second stage without any injury to mother or child, and it is so simple that it can be used in the home as well as in the hospital. There is a much smaller percentage of perineal tears when this form of anæsthesia is used, and any suturing that is necessary for a tear or an episiotomy can be performed without pain to the mother. A. Goss.

PUERPERIUM AND ITS COMPLICATIONS

Schüler, W.: *The Clinical Picture of Puerperal Infection with the Gas Bacillus* (Zum Krankheitsbild der puerperalen Infektion mit dem E. Fraenkel'schen Gasbazillus). *München. med. Wchnschr.*, 1914, No. 48.

The author reports two cases of infection with bacillus aerogenes capsulatus complicating abortion. One case ended fatally after a very short course. Hæmoglobinuria was present. It is a bad sign and diagnostically points to infection with the pus bacillus. At autopsy of the fetus, following the mother's death, air was found in the lungs. This is an important feature, as it may lead to medicolegal complications. Convulsions were also present, so that eclampsia was at first suspected. The autopsy findings, however, showed œdema of the brain and softening, and in the cortex of the cerebrum there were several areas of necrosis, thus accounting for the convulsions. L. A. JUHNKE.

Wahrer, C. W.: *An Unusual Hæmatoma Following Labor.* *Surg., Gynec. & Obst.*, 1915, xx, 411.

Wahrer reports an unusual case of hæmatoma of the pelvis in a young woman, following her second confinement. The placenta had been delivered manually, otherwise labor was normal. The patient when seen on the seventeenth day was very pale, had a fast pulse and high temperature. There was a history of some irregular vaginal hæmorrhage. The abdomen was somewhat larger than a seven months' pregnancy. Laparotomy revealed a hæmatoma extending from the right side of the pelvis to beneath the ribs and to the left beyond the median line. Drainage resulted in recovery. The chief points emphasized are the great size of the tumor and that bleeding must have continued slowly for many days in order to have produced so large a mass without causing death.

Zweifel: *Treatment of Post-Partum Hæmorrhage* (Die Behandlung der Blutungen in der Nachgeburtszeit). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xli, 189.

If there is atony of the uterus, that is, if the labor contractions are weak, delivery should not be per-

formed at once, but measures should be taken to strengthen the contractions, and the delivery is performed afterward. There is no hæmorrhage so long as the child is still in the uterus and the placenta is still adherent. But if the walls are atonic, the condition persists until after delivery and then severe hæmorrhage may occur. To prevent this the walls of the uterus should be toned up by mechanical, thermic, chemical, or electrical means.

If hæmorrhage keeps up unduly after delivery, it must be arrested as speedily as possible, and Zweifel has found bimanual, extragenital massage of the uterus a useful method. The left hand is worked down between the symphysis and uterus, pushing the cervix firmly back against the sacrum, while at the same time, with the back of the hand and the fingers, the uterus is pushed upward against the right hand, which grasps the body of the uterus above and rubs and presses it, thus effectually massaging the organ. This is easily and rapidly done unless there is too much fat in the abdominal walls. Working the hand down in this way between the symphysis and uterus also shows whether or not the placenta is loose. If it has become detached, the umbilical cord is generally pushed out of the vagina by this manipulation, while if the placenta is still attached the protruding cord is drawn in again by it. While the uterus is being massaged in this way water at a temperature of 120° F. should be prepared, containing two teaspoonfuls of salt to each liter. Water alone dissolves blood corpuscles and thus checks coagulation.

Hæmorrhage from atony of the uterus is generally arrested in 15 minutes by the massage and heat. If it continues or recurs after this, there is probably some internal injury, and Zweifel recommends constricting the waist by Momburg's method. This leaves the physician's hands free for internal examination. If the uterus is contracting and the bleeding still continues, the blood must come from some artery, and this must be sought and ligated or the opening drawn up. If the os is completely dilated at delivery there can be no laceration of the cervix. It is better, he adds, to wait for complete dilatation, using inflatable bags, or even cutting the cervix; this is preferable to letting it tear. If the finger feels a slit in the cervix, the edge each side is seized with forceps, thus arresting the hæmorrhage and permitting the edges to be sutured together between the forceps, which are not removed until the catgut is ready to be tied. When the uterus has to be tamponed he uses a purified tincture of ferric chloride made by evaporating the official tincture and redissolving it in distilled water. Gauze dipped in a 5 per cent solution of this stops hæmorrhage, and the solution is not caustic. A. o ss.

Blodgett, S. H.: *Prophylaxis of Puerperal Convulsions.* *Med. Rec.*, 1915, lxxxvii, 478.

Careful observation of a number of cases at the Massachusetts Homeopathic Hospital and in his

private work has enabled the author to arrive at the following conclusions.

1. Careful watching of the urea output and making necessary changes in the diet will enable one to carry safely to term many cases which would otherwise go into convulsions or necessitate the induction of labor.

2. The clinical symptoms are of secondary importance to the urea output in foretelling the probability of convulsions.

3. The amount of albumin in the urine in a case of pregnancy is of secondary importance as regards the probable occurrence of convulsions.

4. With proper and persistent prophylactic treatment puerperal convulsions may be prevented, but after convulsions have occurred the question is of more serious moment.

5. To be on the safe side an examination of a sample of the 24-hour urine should be made every two weeks during pregnancy from the third to the sixth month and once a week during the last three months.

6. A pregnant woman whose physician does not keep a careful watch of the urine after the third month would probably be in less danger of convulsions if she stopped eating meats or fish during the last six months of pregnancy.

WILLIAM D. PHILLIPS.

Liesegang, R. E.: Puerperal Osteomalacia (Über die puerperale Osteomalakie). *Zentralbl. f. Gynäk.*, 1915, xxxix, 241.

It has been suspected for some time that pregnancy produced acidosis, because a low alveolar carbonic-acid tension was regularly found, as also a tendency to acetoneuria and increased ammonia formation. The proof for this has lately been brought by the investigations of Hasselbach and Gammeltoft, who regularly found an increase in the fixed acidity of the blood. The proof of the pressure of acidosis tends to support the acid theory of puerperal osteomalacia, as in this disease the decrease of the calcium content of the osseous system seems to be the most important phenomena, and we know that the acids are the only substances capable of dissolving bone salts.

The acid theory of osteomalacia was considered rather favorably a few decades ago. It was Levy, who, in 1894, on the basis of his result obtained in analyzing the bones of a woman with osteomalacia, discovered the entire acid theory which has never come into prominence again. He found that the bones of osteomalacic patients contained much less inorganic salts than normal bone, corroborating previous findings. Calcium salts were decreased about one-third from normal. The spongiosa showed a greater loss than the compacta, so that the process is to be considered as proceeding from the medulla to the cortex and epiphysis. The fact that the bone ash showed the same relationships between the carbonates and phosphates as normal bone does, surprised Levy. He reasoned that if free

acid was present the much less stable carbonates ought to be first attacked and dissolved. Other authors reasoned similarly. Liesegang, however, has proved that one salt does not diminish more than the other, both decreasing proportionally. The mistake made by Levy and others was in grinding up the bone very fine and exposing it to the action of the acid directly. If, however, the bone is left intact or the particles are imbedded into a mass like gelatine or agar-agar, the action of the acid is manifested on both salts equally, because the acid is unable to attack the carbonates before the phosphates have otherwise been cleared away, allowing access to more of the former, thus keeping up a uniform destruction or solution of both salts. In the bone the connective tissue acts like the medium of gelatine in which the small bone particles are suspended; the objection of Levy against the acid theory of osteomalacia therefore is not based on fact.

Hoffe-Seyler called attention to another difficulty in reference to the acid solution necessary to dissolve the bony tissue; i.e., that such a solution would necessarily presuppose a high acidity of the blood not compatible with our present knowledge regarding its composition. According to the recent investigation of Hasselbach as to the completeness with which the normal oxygen concentration of the blood is maintained in spite of acidosis being present, the objection is justifiable. Some recent work of Michaelis, however, dispels that also. He has proved that the normal tissue juices contrary to the blood are not alkaline but neutral or weakly acid in reaction. He concludes that in the acidosis of diabetes the expected increased oxygen concentration of the blood is to be sought in the tissue fluids of the body. The analogy in osteomalacia is permissible.

The objections against the acid theory of osteomalacia may therefore be set aside. We may assume that the calcium destruction in puerperal osteomalacia is a definite result of the neutralization process of the acidosis of pregnancy in addition to the other factors brought out by Hasselbach and Gammeltoft.

L. A. JÜHNKE.

Jardine, R.: A Clinical Lecture on Puerperal Eclampsia. *Clin. J.*, 1915, xlv, 73.

The author outlines the general treatment of his cases of eclampsia as follows: Upon admission the patients are given either a tub or sponge bath, followed by a copious enema in order to empty the lower bowel, after which the stomach is washed out and a large dose of magnesium sulphate is left in. With this may be given a large dose of chloral and bromides. Realizing that the urinary system is also at fault he gives saline transfusions, containing one dram each of sodium chloride and sodium acetate to the pint of water, usually under the breast. Elimination by the skin is also favored by the use of hot-water applications or packs. To control the convulsions he does not advise the gen-

eral use of chloroform, because of the effect on the liver, nor morphine, because of the effect on the secretions. In cases with high tension and pulse rate he advises the use of veratrine in 0.5 ccm. doses, repeating it in a few hours if necessary.

In regard to the obstetrical treatment, it is best not to interfere, but to let nature take its course, as in the majority of cases the results will be better.

He concludes by reporting briefly 13 cases, 9 of which were pregnant for the first time; of the multiparæ one was pregnant for the eighth time, one for the eleventh, and one for the thirteenth. In 5 of the cases the convulsions began after delivery.

WILLIAM D. PHILLIPS.

Fromme, F.: Ligation of the Vena Cava in Puerperal Pyæmia (Über die Unterbindung der Vena cava bei puerperaler Pyämie). *Ztschr. f. Geburtsh. u. Gynäk.*, 1914, lxxvi, No. 2.

In a puerperal pyæmia post-abortion in which all other measures had failed the author decided to ligate the veins in the pelvis. He found complete thrombosis of the right common iliac vein extending 2 cm. into the vena cava. The left common iliac vein was normal. The vena cava was ligated three and one-half fingers above the bifurcation with a firm silk ligature. The fever ceased, but on the tenth day after operation fresh chills and fever set in, causing death in three weeks.

At autopsy it was shown that the ligation of the vena cava was insufficient, as the infectious process passed over to the left common iliac vein and by a circuitous route reached the heart. In similar cases the author advises the ligation of the normal iliac vein just below the bifurcation.

L. A. JUHNKE.

MISCELLANEOUS

Prochownick, L.: A Contribution to the Attempts Made at Artificial Fertilization in the Human (Ein Beitrag zu den Versuchen künstlicher Befruchtung beim Menschen). *Zentralbl. f. Gynäk.*, 1915, xxxix, 145.

The author reviews his experiences derived from attempts made at artificial fertilization, or, better, artificial introduction of semen for fertilizing purposes. He divides the cases into three distinct classes.

The first class of cases includes those in which sterility is due to some defect of the man, such as hypospadias or epispadias, with healthy semen. Mechanical measures, such as the introduction of a sponge into the vagina during coitus and later forcing it up against the cervix may prove successful; or the semen may be artificially introduced directly into the uterus.

The second group of cases is due to decreased impotence of the man in the presence of healthy semen and healthy but very small external genitalia. The cause of this impotence frequently is due to early marriage, lack of physical exercise from childhood on, poorly developed penis, testicle, and epididymis. In others the organs may be normal and the

semen may appear normal, and still sterility results. The author had successful results in several cases by introducing the semen directly into the uterus.

The third group consists of cases in which the sterility is due to a diseased condition in the woman. Inflammatory conditions of the uterus, tubes, and ovaries are responsible in the majority of instances, and are common in the practice of all gynecologists. Through patience and conservative measures of treatment many cases will ultimately be cured and conception follow. Other cases in which definite pathological conditions prevent conception must of course be submitted to the operative measures necessary.

A few words about the technique: In addition to the technical details a thorough knowledge of both persons is necessary. All imposing preparations should be avoided, antiseptic as well as aseptic; the instruments, hands, and gloves should be clean, warm, and dry. He employs the Braun metal and glass syringe and the semen is injected directly into the uterine cavity. The remainder of the semen is placed on gauze at the external os and allowed to remain for an hour and a half, when the gauze is removed.

Considerable tact is necessary in the management of these cases, as fear, restlessness, and bashfulness must be combated so as to avoid loss of time, which is essential after the semen is obtained.

Further study and comparison of technique, conditions, and results are necessary before any definite conclusion can be drawn, as the attempts so far have been too few. The author hopes that others will take up the problem and endeavor to obtain a solution.

L. A. JUHNKE.

Adachi, S.: Method for the Diagnosis of Pregnancy (Beiträge zur Schwangerschaftsdiagnose mittels des Antitrypsinverfahrens). *Ztschr. f. Geburtsh. u. Gynäk.*, 1914, lxxvi, No. 2.

The author's investigations were carried out on the material of the Charity Gynecological Clinic according to the method of Rosenthal. The sera of non-pregnant, normal pregnant women being used on eclamptics and on patients with gynecologic or obstetric abnormalities.

In regard to pregnancy the reaction was tried on 30 clinically positive pregnant cases and 29 of them reacted positively; i.e., the antitryptic action of the serum was greater than normal. It is therefore highly probable that the early diagnosis of pregnancy is rendered more certain by a definite decrease in the antitryptic titer of the serum which occurs in the early months of pregnancy.

L. A. JUHNKE.

Pfeiler, W., Standfuss, R., and Röpke, E.: Abderhalden's Dialysis in the Diagnosis of Pregnancy (Über die Anwendung des Dialysierverfahrens für die Erkennung der Trächtigkeit). *Zentralbl. f. Bakteriolog.*, 1915, lxxv, 525.

The authors give the detailed results of a large number of experiments on animals with Abder-

halden's dialysis. They find that ferments are demonstrable in the serum of pregnant and tuberculous animals which catabolize placenta or tuberculous tissue. These ferments are not strictly specific, but the serum of pregnant animals frequently catabolizes tubercular tissue, and the serum of tubercular animals catabolizes placenta. Other tissues, too, such as the liver or placenta of other species of animals, are catabolized. The serum of non-pregnant and non-tubercular animals also frequently shows a reaction with placenta, tuberculous tissue, and tissue of other species.

There are certain tissues which are especially easily influenced by the serum of pregnant, diseased, and normal animals. Diseased tissue, for instance tuberculous tissue, seems to be more readily affected by the ferments than normal tissue. Kjaergaard holds that the difference in reaction between pregnant and non-pregnant sera is only a quantitative one. By modifications in the experiments it can be shown that every serum has some proteolytic action on placental tissue. The authors decide that no definite conclusions with reference to diagnosis can be drawn from the reaction.

A. Goss

Stresemann: Investigations Conducted with the Aid of Abderhalden's Dialysis Reaction During Pregnancy and in Other Gynecological Affections, Including Cancer (Untersuchungen mit Hilfe des Abderhaldenschen Dialysierverfahrens bei Schwangerschaft und gynaekologischen Erkrankungen einschliesslich Karzinom). *Gynäk. Rundschau*, 1914, viii, 585.

In a second series of experiments with the Abderhalden dialysis reaction the author tabulates his results in detail. The serum of pregnant women in every case gave a positive reaction. The serum of all cancer patients gave a positive reaction for cancer tissue only and a negative reaction for placenta albumin. The serum of pregnant women did not digest cancer tissue, showing that the reaction is really more specific than hitherto believed. In all cases in which a negative reaction for placental albumin and cancer was obtained, cancer and pregnancy could be excluded positively. Five positive non-pregnant women gave a positive reaction for placental albumin. The author believes that these cases are due to errors of technique, which in spite of the utmost care creep in and probably will in the future also. The complicated technique and the material which deteriorates rather easily must be held responsible for that. The placental and cancer tissues are not very stable in spite of the most careful preparation and preservation in chloroform toluene.

All material employed should be thoroughly tested before any experiment is made, and controls are absolutely essential. The Abderhalden test undoubtedly is of practical importance, but as yet should not be employed generally in practice, owing to the numerous errors and difficult technique. The reaction should be made only in a well-equipped laboratory and in competent hands, and even then there will be failures.

L. A. JUHNKE.

Kjaergaard, S.: Abderhalden's Reaction of Pregnancy, Its Method and Specificity; Investigations on Healthy Women Post- and Premenstrually (Über Abderhalden's Graviditätsreaktion, ihre Methodik und Spezifität, Untersuchungen von gesunden Frauen post- und prämenstruell). *Ztschr. f. Immunitätsforsch. u. exper. Therap.*, 1914, xxii, No. 1.

The author first discusses the technique and specificity of the reaction and, second, the results obtained in ten healthy women on whom the reaction was tried. He comes to the same conclusion as Herzfeld did recently, but by another route entirely, that the sera of non-pregnant women also possess proteolytic properties. The difference in the reaction between the pregnant and the non-pregnant woman is only of a quantitative nature. The properties regarding placental tissue are demonstrable by making a few modifications in the technique.

It is important to be particular in regard to the quantitative relations under which the tests are made, of the time of reaction, the quantity of placenta used, and of the quantity and concentration of the serum. One receives a thorough conception of the proteolytic property by performing tests with a gradually increasing time of incubation.

During pregnancy a definite increase in the proteolytic property of the serum is demonstrable; the serum of pregnant women reacts much more strongly than that of non-pregnant women or of men. There are conditions, such as salpingitis, achylia, and metrorrhagia, in which the proteolytic property of the serum is increased, so that it may react more strongly than the weakest reacting serum of pregnant women. The diagnostic value of the method, therefore, must naturally be judged accordingly. The greatest significance may be attached to the slight proteolytic activity; if a serum after 16 hours' dialysis does not give a reaction, it speaks very definitely against progressive pregnancy. A positive reaction may be induced by other conditions besides pregnancy, and it is therefore of little diagnostic value.

The normal proteolytic activity of the serum of women is subject to cyclic variations from menstruation to menstruation, with increase in the premenstrual state. This premenstrual increase gives rise to reactions similar to those of pregnancy and is therefore of much practical importance in addition to its theoretical significance in explaining the increased proteolytic property of the serum during pregnancy.

L. A. JUHNKE.

Lohmeyer, G.: The Behavior of Proteolytic Ferments of the Leucocyte During Pregnancy, Puerperal Diseases, and in Tumors of the Female Genitalia (Über das Verhalten der proteolytischen Fermente der Leukocyten bei Gravidität, puerperalen Erkrankungen und Tumoren der weiblichen Geschlechtsorgane). *Ztschr. f. Geburtsh. u. Gynäk.*, 1914, lxxvi, No. 2.

The author conducted the above experiments according to a method devised by him and fully described in the original. His conclusions are:

1. Pregnancy from the onset produces a definite increase of the proteolytic leucocyte ferment which persists during labor and during the first few weeks of the puerperium.

2. In puerperal fever and in all fevers the proteolytic power of the leucocytic ferment is increased as long as the fever lasts.

3. The proteolytic ferment is also increased in cancer, tuberculosis, and especially in inflammatory diseases of the genitalia, but not in myoma unless it is infected.

L. A. JUHNKE.

Huffmann, M.: The Determination of the Total Quantity of Cholesterin in the Blood of Pregnant Women and of Gynecologic Cases. (Zur Bestimmung des Gesamtcholesterins im Blute an geburtshilflichen und gynäkologischen Fällen. *Zentralbl. f. Gynäk.*, 1915, xxxix, 33.

The author carried on a series of experiments to determine the total quantity of cholesterin in the blood of pregnant women and of gynecological cases. She employed the method of Autenrieth and Funk, which is described in detail.

The cholesterin content of the blood increased during pregnancy from its normal quantity of 0.15 per cent to an additional 0.06 per cent on the average. The curve reaches its maximum during the last month of pregnancy; 8 to 10 days afterward it again drops to normal, irrespective of whether the mother nurses the child or not. In eclampsia the cholesterin content is especially high. Blood from the umbilical cord has a fairly constant amount, 0.11 to 0.12 per cent independent of whether the content of the mother's blood is higher or lower. Menstruation does not influence the cholesterin curve. A definite rise is noticed during an anæsthetic; whereas in malignant tumors a decrease in the quantity is found, especially if at the same time a definite anæmia or cachexia is present.

L. A. JUHNKE.

Jaworski, J.: The Changes of the Heart and Heart Muscles During Pregnancy (Die Veränderungen des Herzens und des Herzmuskels während der Schwangerschaft). *Gaz. lek.*, 1914, No. 22.

The author very carefully examined 14 pregnant women, 12 of whom were perfectly well, in regard to the cardiac changes during pregnancy. The patients were not only examined clinically, but the findings were corroborated with X-ray findings. All the women were below 31 years of age, all were either primiparæ or duoparæ and were at term.

The investigation showed that:

1. During pregnancy, the heart is enlarged in the long diameter as well as in the transverse.

2. Most commonly and to the greater extent the left ventricle hypertrophies.

3. Dislocations of the heart occur.

4. The heart is forced against the anterior thoracic wall.

The author further found that a degeneration of the cardiac muscle could be demonstrated quite

frequently; also an enlargement of the liver, a decreased kidney function, oligocythæmia, leucocytosis, and hydræmia. All these are signs of an intoxication, attributable to the transmission of chorionic villi throughout the system. It may be considered as a syncytiotoxæmia, directly or indirectly due to an insufficiency of the liver and kidney function.

L. A. JUHNKE.

Smith, F. D.: Permanent Enlargement of the Contracted Pelvic Outlet. *Med. Rec.*, 1915, lxxxvii, 569.

Many cases of dystocia due to contraction of the pelvis can be temporarily overcome by a limited increase in the diameter of the pelvic outlet. Many borderline cases should be permanently relieved by an increase of not more than 1.5 to 2 centimeters in the conjugate diameter. Smith states that it is possible to obtain this by permanently spreading the pubic bones, which can be accomplished by the isoplastic transplantation of bone of a certain width to maintain the desired distance between the pubic bones, the transplant being obtained from the internal surface of the upper extremity of the tibia.

W. D. PHILLIPS.

Oden, R. J. E.: Hydrocephalus: the Possible Relation of a Contracted Pelvis to Hydrocephalus Developing After Birth. *J. Am. M. Ass.*, 1915, lxiv, 816.

A case is reported in which two successive children developed post-partum hydrocephalus; both parents were free from stigmata of disease, but the pelvic mensuration of the mother revealed a contracted pelvis. A third child, delivered through a cæsarean section, showed no abnormal symptoms several months later.

This case is sufficient to serve as a forcible argument for the possibility of a contracted pelvis being the prime causative factor in many cases of post-partum hydrocephalus.

EDWARD L. CORNELL.

Marek, R.: Rare Obstetrical Cases; Tetany of the Mother (Zur Kasuistikel tener geburtshilflicher Fälle; Tetanie der Mutter). *Čas. česk. lek.*, 1913, No. 44.

The author describes nine cases of this disease, several of which were complicated with tetanic cataract and were operated upon in the eye department of the hospital. In most instances the patients were multiparæ who developed tetany in the last pregnancy. The symptoms in most cases appeared during the latter half of pregnancy. One patient died. As to the cause of the disease, the author considers it due to parathyroid insufficiency induced by a lack of calcium salts. The prognosis, in view of the almost certain recurrence, is unfavorable. Therapeutically calcium chlorate has given good results when given in large doses; extract of parathyroid glands is less valuable. In severe cases an interruption of pregnancy was necessary.

The author also reports two cases of bronchial

asthma during pregnancy which came under his personal observation, and three in the literature (Voight, Esch, Massini). In the first case the author was compelled to interrupt labor during the fifth month and the patient was saved. In the second case he performed cesarean section in the interest of the child. The patient died shortly after the operation; the severe coughing spells resulted in the prolapse of the bowel through the wound and could not be controlled by means of morphine hypodermically, morphine by mouth, pyrenol, etc. L. A. JUHNKE.

Morgan, H. J.: The Premature Infant. *Ohio St. M. J.*, 1915, xi, 170.

The premature infant occurring once in seven births in hospital and clinic services is not so frequent an occurrence in the better class of private practice. Any baby weighing less than four pounds or measuring less than nineteen inches in length must be included in this group. The majority of deaths are ascribed to bronchopneumonia and syphilis. An important factor operating against their chances of living is the lack of development of the heat-regulating centers. For the maintenance of proper body temperature the patent incubators are mostly unsatisfactory; in hospitals the hot room, with 500 cu. ft. of air space for each infant, serves well. In the home a properly padded clothes basket is convenient and suitable. Heat is furnished by hot-water bottles suspended along its sides. Electrically-heated pads are condemned as dangerous. A temperature of 85° F. must be maintained within the basket. After the initial oil-rub the infant is encased in a gauze-cotton coat and left undisturbed. The loss of heat from exposure for subsequent oil-rubs is a disadvantage.

Feeding is an important problem. Diluted breast milk, kept warm during the feeding, may be administered by a medicine dropper or by gavage in doses from a dram to an ounce every hour or so. A 2 to 4 per cent sugar solution in whey forms an acceptable substitute. Stimulation by drugs may be administered in the feedings. Extra care and attention are necessary, not only through infancy but during the earlier years of childhood as well.

PHILIP F. WILLIAMS.

Zacharias, E.: Genital Hæmorrhages in Newborn Girls (Genitalblutungen neugeborener Mädchen). *Med. Klin.*, Berl., 1914, No. 44.

The genital hæmorrhages of newborn girls must be differentiated from menstruatio præcox. They appear most frequently on the sixth and seventh days and are slight, rarely severe. They last only

a short time, 2 to 3 days. Other disturbances of the genitalia or of the general constitution did not occur at the clinic of Zweifel in Leipzig. The prognosis is favorable, no treatment being necessary as a rule.

According to Halban, these hæmorrhages depend upon an enlargement of the uterus due to irritating substances which originate in the placenta (internal secretion) and pass over into the foetal blood stream. After birth this irritation ceases and the uterus decreases in size. The children in whom this occurred were exceptionally large and the pressure exerted at birth, according to the author, predisposed to genital hæmorrhages. L. A. JUHNKE.

Heynemann, T.: Cause of Icterus Neonatorum (Die Entstehung des Icterus Neonatorum). *Ztschr. f. Geburtsh. u. Gynäk.*, 1915, lxxvi, 788.

Heynemann concludes that icterus neonatorum is primarily due to incomplete function of the liver-cells during the first few days of life: the liver having not developed sufficiently to meet the increased demands made on it after birth. The development of the condition is favored by the congestion of the liver and the attendant destruction of red blood-cells which takes place at this time.

The cause of the destruction of red blood-cells is not definitely known. It is probably due to increased activity of the stellate cells of the liver.

A. Goss.

Thompson, L. M.: Post-Obstetrical Pathology from the Gynecologist's Viewpoint. *Clinique*, Chicago, 1915, xxxvi, 177.

While advanced science has made it possible for the obstetrician to prevent infections after childbirth, mechanical injuries to the soft parts still need to be considered.

Schroeder asserts that the perineum is torn in 34 per cent of the primiparæ and in 9 per cent of the multiparæ. While the injury is sometimes slight and leaves no definite harmful results, many times a woman will drift along for years with a history of having never quite recovered from a certain childbirth. Every precaution should be taken to prevent lacerations of either the cervix or the perineum, but in case of such an injury it should be repaired at the time of delivery or as soon thereafter as the condition of the patient will allow. It should be the aim of every man practicing obstetrics to leave a woman either with no mechanical conditions following labor, or if these occur in the confinement they should be so well repaired that she will be as well after as she was before. C. D. HOLMES.

GENITO-URINARY SURGERY

KIDNEY AND URETER

Anderson, J.: A Case of Polyglandular Syndrome with Adrenal Hypernephroma and Adenoma of the Pituitary. *Glasgow M. J.*, 1915, lxxiii, 178.

The author reviews in detail the case history, clinical and autopsy findings, and the pathology of a case showing lesions in two of the ductless glands. He restricts the term "polyglandular" to those cases showing disordered activity of the ductless glands in which it is difficult to determine which of the structures is primarily at fault. He states that many cases of polyglandular syndrome have been described clinically, but very few have demonstrated lesions in two of the ductless glands after death. The report is summed up by a comparison of the pathology with the clinical findings.

The case reported is a female, aged 28, who had been sick since the latter part of 1908, and had been treated for some time for gastritis. Pain developed in the left ovarian region. Menstruation had been very irregular since the beginning of her history, and amenorrhœa had been present for the past three and one-half years. She had become stout and there was a marked growth of hair on the face and body. She had extreme headaches. The eyes became prominent and red with intense pain back of the balls. Her memory was poor and sleep impossible. She had enjoyed excellent health prior to the onset of the trouble. When admitted to the infirmary in 1913, in addition to these findings the physical examination showed a very stout female who appeared much older than her stated age; there was pronounced exophthalmos; subcutaneous fats were very marked, especially over the body; the skin was dry and harsh. There was petechial hæmorrhage on the hands and arms. The heart and pulse were practically normal; the abdomen showed slight tenderness and indefinite pains on deep palpation; the blood-pressure was 185 mm. During a period of three months in the infirmary the condition changed very little except that her skin hæmorrhages became very marked and were caused by the slightest trauma or jar, and at one time she passed a blood cast of the bowel.

She returned home, but was confined to bed with intense headaches and increasing hæmorrhages from the skin as well as from the bowels. Death from gradual asthenia occurred about two months after she went home. The summary of a complete post-mortem showed chronic Bright's disease, and the presence of tumor nodules in the suprarenal and pituitary glands. There was a senile condition of the uterus and ovaries. Arteriosclerosis was present. The pituitary gland showed marked conges-

tion, and in the anterior lobe was found a tumor the size of a millet seed. This tumor was adenomatous and did not seem to be encapsulated. The cortex of the suprarenal showed evidence of slight hyperplasia and very marked congestion. The medullary portion was rather small in size, but the chromophile cells were quite abundant. In the left suprarenal a tumor the size of a green pea was present in the medulla of the gland, the macroscopic appearance of which resembled very closely the character of the cortex. The uterus was small and its appearance was that of a uterus in the post-climacteric stage. The ovary was small, fibrous, and senile in character, the thyroid gland slightly enlarged and congested, the thymus fatty and atrophied.

The author states that cases of polyglandular syndrome with symptoms pointing to pathology in two of the ductless glands are not rare, and he cites in proof cases of acromegaly and exophthalmic goiter occurring in the same patient. In determining the primary focus in such cases, the author thinks one must always take into consideration the interrelationship and interdependence of the internal secretory glands, and the influence of the withdrawal or increased action of the secretion of one or another on the structure and function of the remainder. He thinks one should always consider the question as to whether the lesions met with in a given case must be regarded as causative, or as secondary to disturbance of glands which should act in harmony. He thinks it possible that a gastrointestinal toxæmia is the probable explanation of the first stage of the onset of the glandular activities.

Considering the relationship of the ductless glands to the clinical history, the author shows the pathologic basis of the several clinical findings. He summarizes as follows:

"We must admit the presence of a lesion in two of the ductless glands, with disturbance of their function, and associated with this were noted structural changes and disturbed function of the other glands. If the histological appearances are of any value in the estimation of the case, we should be influenced in favor of the pituitary disturbance as the chief factor, and would regard the case as primarily one of hypopituitarism. The influence of the pituitary secretion on the ovary is stimulating in character, and its withdrawal leads to loss of sexual characteristics and atrophic changes. Its influence on the suprarenal and thyroid, on the other hand, may be regarded as inhibitory, and decrease of its function may allow of a hyperfunctioning of these organs, with, in the case of the former, symptoms of hyperadrenalism and development of the secondary male sexual characteristics."

G. J. THOMAS.

Fowler, O. S.: A Safe Technique in Renal Radiography. *Denver M. Times*, 1915, xxxiv, 335.

While it is unfair to condemn a valuable diagnostic method because some damage has resulted from its use, or because fatalities have been attributed to it, when the sum of such damage or fatalities is distinctly less than the damages chargeable to the alternative course, as is the case with the injection of opaque substances into the renal pelvis as contrasted with "exploratory operation," the author feels that renal radiography may and should be an entirely safe procedure.

Opaque substances should not be used to estimate the capacity of the renal pelvis. Furthermore, it is not essential that the pelvis be distended with the silver solution for the production of a satisfactory radiogram. Under these circumstances the exact shape of the pelvis is not obtained, but this is a matter of little moment; the essential thing is to determine if there is an obstruction, its character, and its position, and these things can be learned by the injection of relatively small quantities of solution.

The author's technique consists in the estimation of pelvic capacity, if this seems desirable, by the injection of a weak solution of methylene blue some days prior to the radiographic examination. Then one-half this quantity of collargol is used, half of it being injected into the pelvis, and half into the upper end of the ureter. If this preliminary examination has not been made, then 3 ccm. of 15 per cent collargol are injected into the pelvis, and an equal quantity into the upper part of the ureter. It is essential that these injections be made immediately before the exposure, and that the patient be in the upright posture. After the exposure, the patient should maintain a recumbent posture until the urine clears.

S. W. MOORHEAD.

Adams, J. E.: Urinary Calculus in the Pelvic Portion of the Ureter. *Lancet*, Lond., 1915, clxxviii, 857.

The author gives the three common situations in which calculi become arrested: (1) at the junction of the renal pelvis and ureter; (2) at the abdominal portion of the ureter; (3) in the pelvic portion of the ureter.

He diagnoses the presence of ureteral calculi by the following symptoms: The patient complains of pain in the rectum aggravated by pain on defecation, abdominal or pelvic pain, renal or ureteral colic. The most common history is of severe attacks of pain in the lumbar region in the past and dull gnawing pain in the lower abdomen in the present. Pelvic calculus causes pain starting in the loin and extending to the hypogastrium. Pain is usually accompanied by vomiting, sweating, and hæmaturia. Rest in bed seldom relieves the attacks. Frequent micturition and albumin also reveal the presence of calculus. Adams often noticed tenderness and rigidity on palpation in both lumbar regions. He cites Thomson Walker, who states that bladder irritation, frequent micturition with pain along the

urethra to the end of the penis accompanied by painful emissions, hæmospermia, and testicular pain are prominent symptoms of calculi impacted in the last few inches of the ureter. The most important diagnosis is by X-ray examination, where calculi are noticed as elongated or bean-shaped bodies with one pointed extremity.

In cases where all palliative measures fail, Adams operates by a suprapubic route as advocated by Judd. He distends the bladder with fluid and places the patient in a moderately high Trendelenburg position and makes the usual median incision as for suprapubic cystotomy. Then he sweeps away with a gauze pad the peritoneum and passes two silk guides through the muscular coats of the bladder, which is emptied of its fluid. Afterwards he pulls the bladder up toward the lower angle of the wound and pushes the cellular subperitoneal tissue toward the diaphragm, until he finds the ureter, which is dilated if a calculus is present. When he identifies the presence of a calculus, he passes a couple of catgut stitches through the ureteral outside coats and pulls it up toward the surface of the wound. Following this procedure he makes a small slit in the dilated ureter and removes the calculus with narrow-bladed forceps and closes the incision with fine catgut at right angles to the long axis of the ureter. After operation he drains the wound down to the ureter with a rubber tube, which is withdrawn by degrees after forty-eight hours if the wound remains clean. In all his cases the wounds were healed at the end of a fortnight and he advises this route for operation on the pelvic portion of the ureter because it is simple, easy, and rapid.

J. RADD.

Coryell, J. R.: Renal Cancer Associated with Renal Stone. *Bull. Johns Hopkins Hosp.*, 1915, xxvi, 93.

Chronic irritation as a cause of cancer in general is discussed, and a summary of the evidence which points to this conclusion is set forth. The report is based on 145 nephrectomies at the Mayo Clinic, of which 131 contained stones alone, 5 cancer alone, and 9 were cases of cancer associated with stone. In other words, in 64 per cent of cases cancer of the kidney was associated with stone. The macroscopic and microscopic findings in these cases seem to warrant the following conclusions:

1. Renal epithelium not infrequently regenerates.
2. Renal tubules regenerate not infrequently as a whole.
3. The stages of development of renal epithelium under the influence of, or as a result of, irritation which is constant and prolonged are: (1) normal, (2) inflammatory, (3) hyperplastic, (4) neoplastic — benign or malignant.
4. The preparatory phenomena of renal new-growth seem to take place, not in the area which shows actual inflammatory reaction, but just beyond the same.
5. Even if heredity plays the same rôle in human cancer as it seems to play in mouse cancer, chronic

irritation in the kidney is still of great importance, in that it determines the location of the neoplasm.

6. Renal cancer develops from the epithelium, both of the pelvis and of the tubules.

In all specimens studied, the kidney in some portion showed an inflammatory reaction. The destruction of the renal substance varied in degree and was brought about by interstitial or parenchymatous changes or both; and suppuration was of frequent occurrence.

After having seen the gradual changes from normal tissue to inflammatory, from inflammatory to hyperplastic, and from hyperplastic to neoplastic, it appears probable that the chronic irritation brought on by the stones was the direct cause of the cancer.

C. R. O'CROWLEY.

Hagner, F. R.: Acute Hæmatogenous Infection of the Kidney. *Virg. M. Semi-Month.*, 1915, xx, 30.

The vast majority of cases of acute hæmatogenous infection of the kidney are unilateral, a possible explanation of which is given by the experiments of Brewer, who experimentally reduced the resistance of a dog's kidney by injury or circulatory disturbance and obtained infection by injecting bacteria into the circulation. According to Cunningham, the pathological process is of two distinct types: (1) the acute fulminating type with abscess formation usually due to staphylococcus or streptococcus infection, and (2) the diffuse inflammatory type without breaking down of tissue which is due to the colon bacillus.

The two types are also distinguishable clinically, which is of great surgical importance, inasmuch as the acute form with abscess requires immediate and radical treatment, usually nephrectomy, whereas the diffuse form of the infection may not demand surgical interference. In the fulminating type with more general pain the condition may so much resemble intraperitoneal disease that the kidney is very likely to be overlooked. In many instances the affected kidney is so overwhelmed that its function is suspended or nearly so. In these cases it is of the greatest importance to be certain of the presence of a good kidney on the opposite side, as the diseased kidney will, as a rule, have to be sacrificed. The author reports two cases, one of each type.

The first case was a child 10 years old who had been running a temperature of 101° to 103° for 14 days, caused by tonsillitis for which the tonsils had been removed without improvement. The only subjective symptoms were pain and tenderness on the right side. A tentative diagnosis of chronic appendicitis had been made, but on account of the presence of a small amount of pus in the urine a cystoscopic examination was advised. The urine from the left kidney was normal but that from the right showed a little pus and was cloudy. A unilateral kidney infection was diagnosed and operation advised. At the operation the kidney was split from pole to pole, two infarcted areas, the only

evidence for which on inspection were two areas of increased solidity in the lower half of the kidney, were removed, a drainage tube inserted in the lower pole down to the pelvis, and the wound sutured. The temperature reached normal within 36 hours. The patient is now 19 and apparently in perfect health.

The second case, in which the diagnosis was not confirmed by operation, which was not necessary, was clinically of the nature of a diffuse infection. A pure culture of the colon bacillus was found in the urine, and, because of the great increase in pus in the urine with fall of temperature and clinical improvement, suppuration with drainage into the kidney pelvis was diagnosed.

Of the 43 cases reported by other surgeons, 22 were treated by nephrectomy with one death; 12 by nephrotomy or decapsulation and incision with drainage of the infarcts with six deaths. The milder cases which have recovered without operation have been mostly due to the colon bacillus.

FRANK HINMAN.

Weber, F. P.: Bilateral Hypernephroma, with Secondary Thrombosis of the Inferior Vena Cava and Terminal Uræmia. *Proc. Roy. Soc. Med.*, 1915, viii, *Med. Sect.*, 6.

The case reported by Weber is that of hypernephroma occurring in both kidneys, with secondary thrombosis of the inferior vena cava. The first symptoms were noticed in February, 1914, with swelling of the legs. The patient was admitted to the hospital in October, 1914, feeble and emaciated, with distended abdomen and oedematous legs. There had been no urinary symptoms, but shortly after entrance the urinary output began to decrease, and the patient died a month later.

Autopsy showed hypernephroma of both kidneys, with metastases in the liver and lungs. The inferior vena cava was blocked with antemortem clot throughout its whole length; the clot involved both the iliac veins below and extended upward to the right side of the heart, terminating by a rounded mass which projected into and partly filled up the right auricle. Both the hepatic and the renal veins were similarly affected. Microscopical examination of the clot showed it to be secondarily infiltrated by the malignant growth. J. DELLINGER BARNEY.

Liek, E.: The Arterial Collateral Circulation of the Kidney (Ein weiterer experimenteller Beitrag zur Frage des arteriellen Collateralkreislaufs der Niere). *Arch. f. klin. Chir.*, 1915, cvi, 435.

Liek discusses the work of Isobe, Katzenstein, and others who have attempted to prove by experimental work that there is no collateral circulation in the kidney, but that one can be created by painting the kidney with iodine and implanting it in the lumbar muscles or by nephrotomy and implantation of omentum. He also describes in detail experiments of his own on dogs that he holds disprove these contentions. His own experiments prove that the

renal artery (of the dog) is not a terminal artery, but that it has anastomoses with numerous other extremely small vessels.

The kidney does not die completely after ligation of the chief artery; but greater or less areas remain alive, depending on the number and size of the collaterals. Though the intact kidney has collaterals, they cannot ordinarily be demonstrated, because they are so small that the material injected does not enter their lumen, but after the ligation of the chief artery they dilate, owing to the functional demands made on them. This takes some time, but after 12 hours the vessels are filled with the injected material. These normal collaterals were the ones Katzenstein thought had been produced by his surgical procedures. Liek thinks that decapsulation and operations such as those referred to are not justifiable in human beings for the sake of increasing the kidney circulation. The fact that there are collaterals in the human kidney is indicated by the development of infarcts.

A. Goss.

Taylor, F.: A Case of Multiple Pulsating Tumors Secondary to Hypernephroma. *Lancet, Lond.*, 1915, clxxxviii, 483.

The patient, a sailor aged 59, had a severe attack of hæmaturia. He was found to have pulsating swellings of the right elbow, the right shoulder, and the right gluteal region. He gradually became weaker and died 10 months after he was first seen by the author. The pulsating tumors manifested themselves one year after the first attack of hæmaturia.

At necropsy the left kidney was found to measure 5.5 inches vertically. The upper third was occupied by a spherical tumor 2.5 inches in diameter; it was lobulated and had a definite capsule. On section it presented hæmorrhagic areas. Throughout the rest of the kidney, with the exception of one inch at the lower pole, were scattered growths of the same kind, from the size of a pea to that of a filbert. The left suprarenal capsule contained a small separate tumor. The right kidney and suprarenal capsule were natural. The lungs were dry and silky and contained numerous small nodules scattered through them, ranging from the size of a split pea to that of a small walnut. They could be easily shelled out.

I. S. KOLL.

Ashcraft, L. T.: Diagnosis and Treatment of Tuberculosis of the Kidney. *N. Eng. M. Gaz.*, 1915, l, 200.

The author emphasizes the importance of a correct and early diagnosis in order that surgical therapeutics, with appropriate after-treatment, may produce a cure.

In about 60 per cent of the cases examined post-mortem, renal tuberculosis of the caseocavernous type, the only sort amenable to surgical treatment, was unilateral. The chances that both kidneys may be involved are twice as great in children as in

adults. Statistics show that in 20 per cent of the post-mortem cases, the lungs and other organs participate in the morbid process.

In some rare cases in which genital tuberculosis is primary in the epididymis, or in which a lesion of the prostate exists, the bladder may become secondarily involved by contiguity, and ascending infection through the ureters into one or both kidneys may occur. Usually, however, the infection is hæmatogenous.

Mistakes in diagnosis would be prevented, if the rule were made never to begin the treatment of albuminuria, pyuria, or cystitis until after having made careful chemical, microscopical, and bacteriological examinations of the catheterized urine.

Tuberculosis may, of course, exist without albuminuria; but the presence of albumin should suggest a search for the tubercle bacillus. Even when this organism is not discovered, intermittent albuminuria, in connection with other signs of kidney tuberculosis, is sufficient to confirm the diagnosis in many instances. If after several microscopic examinations pus is found, but no microorganisms, one may make a diagnosis of tuberculosis with almost complete certainty.

The sediment from the specimen of urine obtained by catheterization should be injected into a guinea pig. A careful cystoscopic inspection of the bladder, particularly in the region of the ureteric orifices, will convey a great deal of information. Catheterization of the ureters also discloses changes in them, such as inflammation and partial or complete stenosis. Bilateral catheterization is important in these cases, especially so when one is considering the removal of a kidney.

Ashcraft relies mainly on the phenolsulphonephthalein test, used in conjunction with the urea determination. When tubercle bacilli have been found in the mixed urine and one has been unable to localize the disease by means of cystoscopy and ureteral catheterization, a marked diminution in the output of phenolsulphonephthalein on one side points to disease in that kidney.

It is the author's custom to make both the functional and the quantitative estimation by the phenolsulphonephthalein test. He believes that to rely upon it alone, would be a mistake; but when it is used in conjunction with the output of urea and the clinical signs, it is a valuable aid both to diagnosis and prognosis. It should always be employed before deciding to do a nephrectomy.

Pyelography and röntgenography are valuable adjuncts to diagnosis, and the author claims that there are no bad results from their use.

Valuable evidence of the existence of renal tuberculosis that can be secured in no other way may often be obtained from the use of one milligram of tuberculin, which should be administered by the hypodermic method. Following its administration one not infrequently notices an increase in renal pain, slight temperature, and pyuria.

The presence of pain, albumin, pus, occasional

hæmaturia, and urinary frequency, added to the cystoscopic appearance of the ureters and a careful examination of the urine for bacteria, constitute, if no other organisms are discovered, a strong presumptive evidence of the existence of renal tuberculosis, even though no tubercle bacilli are found. One is then justified in making an exploratory incision on the affected side.

Should it be absolutely impossible, by reason of stenosis of one or both ureters, to determine with accuracy the functional activity of the kidneys, a good deal of information may be obtained, in the male, by an examination of the epididymis and the prostate; and in either sex, by kidney palpation. Tenderness over the erector spinæ, enlarged lymphatics, or lung consolidation may be of added value.

The outlook for the cure of tuberculosis of the urinary organs is favorable, when treatment is undertaken sufficiently early in its course, provided that there are no gross lesions of other organs; but if treatment is postponed until the later stages the prognosis becomes very grave. It is best to postpone the use of tuberculin, as well as other medical and hygienic treatment, until a nephrectomy has been performed.

Nephrectomy should first be resorted to, and then the tuberculin treatment may be effective in preventing the further spread of the tuberculous process. If there is tuberculous involvement of the genitals, excision of the diseased area is the proper treatment.

As a rule, nephrectomy should be performed on the diseased side, and ureterostomy for the ascending tubercular ureteritis, thus preventing the migration of the tubercle bacilli to the opposite side.

Contra-indications for nephrectomy are acute miliary forms of the disease, involvement of the lungs, bones or joints, or peritonitis. On the other hand, slight apical involvement, mild manifestations in other organs, quiescent epididymitis, or slight periostitis should not contra-indicate this operation.

It has been estimated that nephrectomy saves from death four-fifths of those having renal tuberculosis. The prognosis of operative interference is much better in women than in men, according to Vineberg; and nephrectomy is no bar to the bearing of children.

If functional activity is found to be deficient, one surgical procedure may be deferred until, by means of hygienic, dietetic, and other medical treatment, the ability to carry on its bodily function properly has been restored to the slightly impaired kidney.

It is well to remove the ureter when it is markedly involved, showing ulcerations about its orifice. If there is marked bladder involvement, it is, of course, imperative that the ureter be removed.

In cases in which both kidneys are involved, it is sometimes justifiable to attempt a conservative operation on one of them. If marked amelioration follows, the other kidney may be treated in the same way or extirpated. These nephrectomized patients should be kept under supervision and medical treatment.

Treatment must be directed toward the bladder condition. Many cases receive a daily irrigation with bichloride of mercury, 1:50,000, commencing with 30 to 60 ccm. and at each subsequent treatment increasing the amount of fluid and the strength of the solution. Sometimes a 6 per cent carbolic acid solution or a saturated solution of boracic acid is employed. In all circumstances, after each irrigation, 10 ccm. of a 20 per cent solution of carbonate of guaiacol and 1 per cent iodoform in olive oil is injected.

The local pain may be combated by means of opium suppositories. The yellow oil of sandalwood, potentized tuberculin, and bacillinum are also of value. The hygienic treatment is that employed for tuberculosis anywhere in the body.

The tuberculin treatment, however, is of occasional value. Either the method of Trudeau or that of Wright may be employed. In the former a bouillon, supplied from the Saranac Lake Laboratory, is administered once a week, the initial dose being 0.0005 mg. This is gradually increased to 50 or 100 mg., the clinical signs of reaction, local, focal, or constitutional, being closely observed. The method of Wright consists in giving an initial dose of bacillary substance varying from 1:50,000 to 1:20,000 mg.; and in febrile cases, from 1:100,000 to 1:50,000 mg. The doses are given at weekly intervals, and gradually increased, so that at the end of six months or a year, the dosage may be from 1:1,000 to 1:5,000 mg.

While this method is to be used principally in advanced cases in which a nephrectomy has been performed, it may produce some improvement in cases in which operation has been declined or in which the disease is so far advanced as to make operation useless.

LOUIS GROSS.

Lichtenberg, A. von: Operative Treatment of Chronic Recurrent Colon Pyelitis (Zur operativen Behandlung der chronischen rezidivierenden Kolipyelitis). *Ztschr. f. urol. Chir.*, 1915, iii, 238.

In the chronic pyelitis of wandering kidney von Lichtenberg performs nephropexy, taking care that the kidney is anchored in the most favorable position for discharge from the kidney pelvis. In six cases he drained the kidney pelvis by nephrotomy and irrigated until the inflammation of the mucous membrane was healed. The fistula had to be kept open a long time, in one case six months. The cases had been under conservative treatment for a long time without success and the results of operative treatment were excellent.

In cases of colon infection the author seeks to interrupt the lymph-tracts between the kidney and the large intestine by partial decapsulation of the kidney, for it is through these the recurrences take place that render conservative treatment futile. Even irrigation of the kidney does not give the good results that it does in other cases, for with the next intestinal disturbance there is a recurrence of the pyelitis. In such cases he operates on the intestine

at the same time as on the kidney; in five cases he has performed appendectomy and narrowing by suture of the dilated cæcum. The results were excellent and there was no recurrence in four cases; the fifth operation was only recently performed. A. Goss.

Mayo, W. J.: Procedures Following Nephrectomy. *J. Am. M. Ass.*, 1915, lxiv, 953.

Mayo first discusses the transperitoneal closure of duodenal fistulæ following nephrectomy. He states that patients who suffer from a duodenal fistula produced at the time of nephrectomy all die unless the fistula is closed. He advises immediate abdominal section and an incision through the duodenocolic peritoneum, the incision extending from just below the entrance of the common duct around the curve and on the right side of the duodenum. Then turning up the duodenum the fistula may be seen and closed by a transverse line of suture.

In discussing methods of ligation of vascular pedicles of the kidney at the time of nephrectomy, the author recommends the use of the two-clamp method in all cases where it is necessary to ligate the pedicle *en masse*. He advises the ligation of the veins, arteries, and ureter separately whenever possible. Two clamps are placed on the pedicle about half an inch apart and ligation is made between the two. The ligature is either passed through part (one edge) of the pedicle, or around the entire pedicle, which procedure is probably better if it can be done, and the most distal clamp removed as the ligature is tightened and the pedicle thus tied tightly.

In regard to the management of the ureter after nephrectomy for tuberculosis, Mayo discusses the methods of handling the ureter under different circumstances. He says that in their experience at the Mayo Clinic less than 5 per cent of the ureters in tuberculosis of the kidney require removal. These are usually cases in which a stricture exists in the lower portion of the ureter. He says, "To put it broadly, in all tuberculous kidneys which have become closed sacs, or at least have lost their function, the ureter may be sterilized and dropped into the wound, and in such cases the wound should be closed without drainage."

In some ureters where mixed infection is present the drop of the ureter into the wound is liable to cause wound infection. In these cases it is better to attach the end of the ureter to the lower edge of the incision. This is especially true in recent involvement of the kidney when there is considerable functioning renal tissue. He says in a considerable number of cases this method has proved very satisfactory, and no inconvenience has resulted, except the necessity of wearing a little pad of absorbent material over it for a short time if the discharge should continue. A. C. STOKES.

Pennock, W. J.: Pyelography. *Northwest Med.*, 1915, vii, 73.

The first recorded use of this method was in 1905 by Volcker, but its value was not recognized until

Braasch developed the technique and proved its wide range of usefulness in anatomical problems. Its need was also indicated by the surprising number of abnormalities hitherto unsuspected. Kidd says that while kidney abnormalities are of every day occurrence it was not formerly recognized that so many of them were of such a nature as to influence kidney surgery. The kidney and ureter develop from a diverticulum of the lower end of the wolffian duct, and as the kidney gradually ascends toward its position it passes and receives blood supply in succession or at the same time from several different branches of the aorta, one finally enlarging and becoming a permanent vessel of supply. In anomalous positions then the source of this supply may vary. In the Mayo Clinic in the last 5 years, 4 per cent of the operations on the kidney and ureter have been for gross abnormality.

Pyelography has a greater value in the diagnosis of early dilatation of the kidney, pelvis, and ureter, renal neoplasm, and in the surgery of renal calculus. Dilatation of the kidney pelvis makes possible a diagnosis before the increasing pressure has destroyed the kidney. In neoplasm, Braasch says he can now diagnose 60 per cent of the cases from the plate alone on account of the characteristic distortion of the pelvis. Doubt in the diagnosis of ureteral stone, where there is a shadow near the ureteral shadow, can be dispelled if the collargol-filled ureter shows signs of dilatation above the shadow. In infection, the method has value in determining the limitations of the process, the amount of tissue involved, or whether the infection is outside entirely.

Fatalities have been reported. Collargol does infiltrate the medulla, depending apparently upon the pressure and the continuity of the pelvic lining. Braasch reports a thousand cases without fatality or permanent injury, and he believes severe reaction is usually due to poor technique or questionable selection of cases. The value of the method in urinary diagnosis is beyond question, and the procedure is safe if used with care and judgment; that is, avoiding cases presenting contra-indications, employing it only after other careful and complete examinations have been made, injecting only one kidney at a time by gravity under low pressure maintained for the shortest possible time.

HARRY D. ORR.

Young, E. L., Jr.: A New Preparation for Pyelography. *Boston M. & S. J.*, 1915, clxxii, 539.

Young reports the result of researches undertaken to find a substance less dangerous than those heretofore employed in pyelography. The latter have always been soluble organic silver preparations, chiefly collargol. There is always danger of a reaction which may be only slight, but in some cases it is quite severe and may cause rapid or sudden death or may necessitate decapsulation to save the patient's life. "Collargol kidney" has been well studied experimentally and clinically. Collargol

is an absorbable kidney poison when used in the renal pelvis; this explains why gentleness of manipulation will not remove these risks, as it may protect against mechanical accidents but does not guard against those due to absorption and reëxcretion.

Insoluble salts would eliminate these latter dangers. Kelly and Lewis have already tested silver iodide and declare it unirritating. It certainly gives a good shadow; a 5 per cent solution is much more opaque to the X-rays than 10 per cent collargol.

The difficulty lies principally in finding a suitable vehicle for the suspension, one that will not be too stiff to be injected through a ureteral catheter, and at the same time will be stiff enough to hold the suspension. The author selected mucilage of quince seed obtained in the following way: quince seed 100 grains, water 8 ounces; macerate for 24 hours with frequent agitation; do not crush the seed; strain through cloth. Add 2 per cent boric acid up to 20 ounces. It is important to extract with water and not with the boric acid solution. Enough of this mucilage is added to 12.5 ccm. of argentide to make 50 ccm. and the mixture is vigorously shaken for two minutes—the shaking is an essential part of the process. The value of this substance depends on the mode of preparation. It keeps for several weeks.

Young made several experiments on dogs. He found that argentide is not absolutely non-irritating but is much more so than collargol or any soluble salt. He has used it in the Massachusetts General Hospital for several months with perfectly satisfactory results. He uses the barrel of a 10 ccm. syringe as a container from which the emulsion flows into the pelvis. When the pictures are taken this is disconnected from the catheter, emptied, the piston inserted, and as much of the emulsion as possible sucked out of the kidney pelvis. In the majority of cases the larger part can be recovered. The pelvis is then washed out once or twice with boric acid or salt solution; 3 ccm. being sufficient in many cases to give good shadows. F. E. GARDNER.

Ashcraft, L. T.: The Value of Pyelography in the Diagnosis of Kidney Lesions. *J. Am. Inst. Homœp.*, 1915, vii, 1079.

Ashcraft gives his technique for securing pyelographs and testifies to the value and innocuousness of the method if used correctly. He fills the pelvis by gravity, using collargol of 15 to 25 per cent strength. The contra-indications to pyelography he considers to be: (1) hypersensitiveness (in which case he uses spinal anæsthesia); (2) advanced hydronephrosis with marked ureteral obstruction; (3) lesions that can be diagnosed accurately independently of radiography. G. E. SMITH.

Lewis, B.: Ureteral Stones; the Technique of Their Removal by Cystoscopic Methods; Reports of Cases. *Surg., Gynec. & Obst.*, 1915, xx, 462.

In a paper on the above subject read before the Southern Surgical and Gynecological Association,

December 16, 1914, Lewis presented the justification and the technique of the removal of ureteral stone by cystoscopic methods. After calling attention to the fact that usually no middle ground is taken by the surgeon between the expectant plan and that of open operation, the author claimed that cystoscopic methods should be tried in all cases in which there was any promise of success. While ordinarily successful and satisfactory, open operations possessed certain militating features that were of decided moment. They were often difficult of performance, and did not always lead to success either immediately or later. This was proved by reports emanating from many of the leading operators of the country. Tenney was quoted as ascribing from 15 to 20 per cent mortality to open operations for the removal of ureteral stones. This risk should be avoided if possible.

Methods of removal less hazardous than open operation have been evolved and developed to tangible and serviceable realities; and have proved their efficacy in a large number of instances, as recorded by Howard Kelly, Braasch, Young, Schmidt, Kreissl, Casper, Robert Bryan, Harvey Moore, Ashcraft, Moschowitz, the author, and others.

In 1904 Lewis had presented a formulated plan for such work, together with instruments appropriate for carrying it out. While formerly his instrumental equipment consisted of two different kinds of cystoscope—one, the universal, for observation and catheterization; another, an operating cystoscope for direct ureteral attack—the present instrument, developed during the past year, combines all of these in one universal and operating cystoscope, which was demonstrated to the members. Pertaining to it were several auxiliary instruments—forceps, dilators, scissors, etc.—which amplified the ability of the operator in the direction desired. The shafts of all these instruments are now made flexible, to permit of their use at an angle, as well as by the more direct method; also permitting of the threading of the curves of the ureter to a greater distance than was permitted by the straight instruments with fixed shafts.

With stereopticon slides the author illustrated the application and methods of using these in connection with ureteral strictures and impacted stones as located in the different parts of the channel; and also depicted the steps of ureteral catheterization as employed by him, and some of the conditions for which such measures were appropriate.

Barber, W. H.: Uretero-Enteric Anastomosis. *Ann. Surg.*, Phila., 1915, lxi, 273.

In the author's experimental work in uretero-enteric anastomosis on dogs, the following technique was used:

Through the low mid-abdominal an incision is made, and the ureters freed and divided between two ligatures at their insertion into the bladder. A straight cutting needle is then attached to the

proximal ligature on the ureter and the sigmoid colon is punctured in a line perpendicular to its long axis. The needle is then continued through at a point 90° distant on the intestinal wall, thus drawing the ureter through the sigmoid and out again. The sigmoid is then suspended within the wound by the usual glass-rod method. The ligated end of the ureter is allowed to protrude on to the skin, where its ligature is fixed by a single suture. The wound is then closed about the sigmoid and ureter. Six hours later the exposed ureter is incompletely cut and allowed to empty. It may be returned to the lumen of the intestine at any time thereafter, but it is well to retain it under control until its continued patency is assured. One or both ureters may be transplanted in this way within twenty minutes. Of eight dogs so operated upon all survived; one alone died within the first week, following sloughing of the ureter from overtension. The others, to all appearances, are normal dogs.

The author does not recommend the operation to clinicians for trial at present, but will make a later report of his results.

H. L. SANFORD.

BLADDER, URETHRA, AND PENIS

Kretschmer, H. L.: Fulguration Treatment of Tumors of the Bladder. *J. Am. M. Ass.*, 1915, lxiv, 1050.

Kretschmer recalls that five years have elapsed since Beer published his preliminary report on a "high-frequency current" method of treating bladder tumors. During this period the method has been widely used, often with some slight modification of terminology or technique. It is now established as the treatment of choice in papillomata. Modern urinary surgery absolutely demands this form of treatment in these types of tumors. A few individuals do not tolerate cystoscopy. Other cases, because of the bladder being completely filled with tumors, are not suitable. These cases will require suprapubic cystotomy and fulguration by the open method or resection.

The fulguration method has stimulated a general interest in the entire subject, which prior to Beer's publication had yielded an unsatisfactory story of management and results. Beer excluded all malignant cases from his therapy. The snipping off of a piece of the tumor for microscopic study prior to deciding on the plan of treatment is now often advised. This procedure has been condemned by many as being not only unsatisfactory but positively dangerous. So-called recurrences are often not recurrences, the site of the original tumor remaining free; the recurrence is really a new growth springing up somewhere in the immediate neighborhood. These tumors, then, should be considered as true new tumors. Small tumors located by cystoscope after a suprapubic operation may have been overlooked at the time of the operation.

The author describes the usual technique, and sees little difference in choice between the unipolar

or Oudin and the bipolar or d'Arsonval currents. The recent type of insulating cable with a bone tip is a distinct improvement. The application of the current should be to the pedicle, but in large tumor masses this is impossible, when the most easily approachable point may as well be attacked first. The element of pain is inconsequential. This is most evident when after removal of a large mass only the base remains to be sparked. The length of the sittings depends largely on the "nervousness" of the patient, some being most intolerant and others quite the contrary. No serious complications have been recorded following such treatment. Kretschmer fails to see that the current has any definite value as a hæmostatic. The sloughing fragments have little value for histologic study, as they stain poorly and show loss of structure. There may be a marked reaction in the bladder wall following such applications, and this must be borne in mind in subsequent cystoscopies.

The cases treated are classified in four groups: papilloma, papillary carcinoma, carcinoma, and polyps.

Eighteen cases in all were treated with uniformly good results except in carcinoma. In the latter, three cases treated by the spark alone experienced great pain without beneficial effect on the growths. Three cases which were operated upon suprapubically and later sparked showed recurrence and death in two, and one patient passed from observation. The sex preponderance was twelve males and two females, the oldest patient being 79 years of age.

FREDERICK R. CHARLTON.

MISCELLANEOUS

Ross, A.: A Contribution to the Bacteriology of the Urinary Tract in Children. *Lancet*, Lond., 1915, clxxviii, 654.

The author collected 106 catheter samples of urine which have been fully examined bacteriologically. A series of 19 catheter urines were collected from healthy children and incubated. Of these 19 specimens 11 were sterile after from 48 to 72 hours' incubation, while 8 grew an organism which was invariably a white staphylococcus.

SUMMARY OF REACTIONS

Test	NUMBER OF STRAINS TESTED		Result
Action on litmus milk.....	4/3		{ Acid and clot in 26 Acid only in 17
Peptone water-indol reaction.....	4/3		{ Indol present in 33 No indol in 1
Action on cane sugar.....	27		{ No change in 17 Acid and gas in 10
Action on neutral red broth.....	11		All showed reduction

The catheter specimen was collected in a sterile tube, transferred thence to broth and to McConkey culture-tubes, and 24 hours later neutral red bile salt agar and agar plates were made. All the coli organisms produced acid and gas in McConkey

tubes, maltose, mannite, lactose, and dextrose; grew on gelatin without liquefaction, and formed a red colony on neutral red bile salt agar.

The indol reaction was found present with great frequency after the organism had been grown three or four days in peptone water by using the paradimethylamidobenzaldehyde method.

Out of 43 cases of bacillus coli infection 7 were males and 36 females.

The consensus of opinion, including the author's, favors the view that the infection is from without and due to a direct passage of the organisms from the anal orifice to the vulva, and thence upward via the urethra to the bladder.

As regards the blood stream, Pantou has recently shown that colon bacilli may be cultivated from the blood stream in certain acute infective conditions.

Out of 40 cases of colon infection one showed a true pyuria; two others revealed numerous polymorphonuclear leucocytes with a slight deposit on centrifugation; 19 examples showed a variable number of bacilli, scanty leucocytes, or merely a few mononuclears; 6 showed neither cells nor organisms in the film, and the remaining 12 showed bacilli alone with no cells.

Autogenous vaccine was used for 3 patients with bad pyuria on the surgical side. In all the bacilluria persisted, but the amount of pus was diminished and the clinical state underwent an improvement which had not been noticeable previous to the use of vaccines. Among the patients in the medical wards vaccine treatment was but little employed, and in the oedematous cases 3 to 5 minims of 1 in 1,000 adrenalin solution, either orally or hypodermatically, was particularly successful; in numerous instances alkaline treatment was used with good effect.

In this investigation particular interest has centered around certain cases of acute enteritis in children, complicated by oedema, the majority of which were found to be subjects of a colon bacilluria. In this group are included two cases of bacilluria due to Day's paracolon organism and one to the bacillus of Gärtner. In three or four instances a bacillus was isolated which was not identified and which some authors speak of as a variety of bacillus coli termed "non-aërogenes."

In the group of infections due to bacillus proteus vulgaris there were 8 cases of summer diarrhoea complicated by oedema, 3 others not so complicated, and the remainder included such varied disorders as constipation, bronchopneumonia, measles, and appendicitis among 9 girls and 10 boys. In these the chief diagnostic point lay in the isolation of a gram-negative bacillus with the power of liquefying gelatin. Five strains out of 12 tested gave an indol reaction.

Staphylococci alone were isolated 25 times from pathological urines. The diseases concerned included oedema after enteritis 4, enuresis 2, uncomplicated acute enteritis 1; other examples were multiple arthritis, acute mastoid, cystitis, acute nephritis, purpura, spasm of the sphincter vesicæ, pneumonia, and pleurisy.

Various media were used with the following results:

- Gelatin slope—
 - 19 strains: no liquefaction
 - 6 strains: liquefaction
- Litmus milk—
 - 13 strains: acid
 - 10 strains: acid and clot
 - 2 strains: no change
- Maltose—
 - All acid
- Mannite—
 - 22 strains: no change
 - 3 strains: acid (usually slight)
- Red broth—

Out of 11 strains tested reduction occurred in 3.

Out of these 25 urinary white staphylococci 3 strains gave the reactions of streptococci epidermitis albus, 11 those of "a staphylococcus sometimes found on the skin," and 10 other strains were slightly atypical, according to the Gordon test.

In rheumatoid arthritis the author quotes Warren Crowe, who has isolated an organism named micrococcus deformans.

Fourteen specimens of urinary staphylococci were examined as to the nature of the colony produced on neutral red egg, with the result that only one proved to be micrococcus deformans. The use of neutral red egg seems to be the crucial test for the presence of micrococcus deformans, as agar is useless for this purpose. THEO. DROZDOWITZ.

SURGERY OF THE EYE AND EAR

Kellogg, F. B.: Cataract Extraction with Preliminary Iridectomy, Irrigation, and Discission. *J. Ophth., Otol. & Laryngol.*, 1915, xxi, 136.

Kellogg has adopted preliminary iridectomy, irrigation of the anterior chamber following extraction, and discission of the posterior capsule about a month later, as a routine practice. The preliminary iridectomy and the discission are done on the principle that the one adds a few chances to the safety of the operation and the other adds appreciably to the resulting vision.

In unripe cataracts a preliminary capsulotomy facilitates a separation between the cortex and capsule, with the result that upon extraction the lens slips out without leaving much cortical substance behind. This procedure, coupled with irrigation, shortens the period of impaired vision.

The author reports 42 cases, 34 of which recovered with practically normal vision. G. D. THEOBALD.

Clark, J. S.: Some Experiences with the Intranasal Partial Resection of the Tear Sac. *J. Ophth. & Oto-Laryngol.*, 1915, x, 71.

Clark enumerates some contra-indications to this operation. Among general conditions contra-indicating local anæsthesia, certain anatomic variations rendering the operation difficult, sinusitis, and ozena, are mentioned. The indications for the operation are: stenosis of the nasal duct, dacryocystitis of all forms. The history of the operation refers to the work of Caldwell, Killian, Passow, and West.

He discusses the necessity for a preliminary resection of the septum in cases of deflection and for removing the anterior end of the middle turbinate when it protrudes over the torus lachrymalis. The steps in the operation, as outlined by West, consist in elevating the mucoperiosteum so as to bring the torus lachrymalis into view, indicating the location of the sac. The sac is covered here by the nasal process of the superior maxillary and the paper plate of the lachrymal bone. A sound in the sac helps orient one and aids in seizing the sac wall for window resection. W. G. REEDER.

Gifford, H.: A Method of Destroying the Lachrymal Sac in Chronic Dacryocystitis. *Ophth. Rec.*, 1915, xxiv, 22.

A low 2 per cent cocaine solution with adrenalin is injected deeply into the tissues about the sac. The sac is exposed and incised vertically for three-eighths of an inch, including most of the palpebral ligament, the incision beginning one-fourth of an inch from the caruncle, care being taken not to squeeze out the sac prior to incision, as it is easier to

locate when distended. A grooved probe is then introduced into the sac, the incision extended one-fourth of an inch farther, and the sac packed with a narrow strip of iodoform gauze. The hæmorrhage is arrested, and the sac is wiped out with cotton, and zinc ointment applied about the external incision. The lips of the wound are then separated down to the sac incision and two or three drops of trichloroacetic acid (full strength) put into the cavity, which is previously treated with a crystal of cocaine. Every part of the interior is scrubbed with a cotton swab, wiped dry and again swabbed with trichloroacetic acid and thoroughly dried. It is irrigated with a cleansing solution and lightly filled with aristol powder. The skin about the wound is treated with zinc ointment and a light moist dressing applied. The first dressing is left on 48 hours. The operation may be done in two stages, the first day's work consisting of opening and packing the sac and the second day continuing the above procedure.

Of 40 cases treated in this manner only 3 had a slight discharge, which subsided after slitting both canaliculi and applying the galvano-cautery to the pocket formed. C. A. MAGHY.

Crigler: Epibulbar Sarcoma with Microscopic and Macroscopic Sections. *Arch. Ophth.*, 1915, xlv, 41.

Crigler removed a tumor from the left eye of a 74-year-old patient, which on examination proved to be a mixed-cell melanotic sarcoma. The eye was enucleated to prevent further extension. In reporting the case Crigler emphasizes the comparative rarity of such tumors, their malignant nature, and the necessity of radical treatment. He says that Verhoeff and Loring made an exhaustive study of the subject up to 1903, and that according to them Holmes found 3 cases of sarcoma of the conjunctiva in 1878 among 20 eye cases, Adamuch 3 in 16,000, and they themselves 2 in 44,719. The records of the Manhattan Eye, Ear, and Throat Hospital show 4 out of 100 cases, while there were 100,000 cases of other conjunctival affections. The author asserts that the tendency of these tumors is to recur locally when removed, and cites the 73 cases examined by Verhoeff and Loring, showing that of 53 treated by primary abscission, 36 had recurrences in from one to several years' time. Bad complications observed in these 36 cases resulting in general metastases, and death in several instances, while the 12 cases subsequently reported, showing rapid recovery and no recurrences following enucleation or exenteration, are shown by the author to be convincing evidence that epibulbar sarcomata should be radically dealt with. C. A. MAGHY.

Bednarski, A.: Decompression Operations in Diseases of the Optic Nerves. *Arch. Ophthalm.*, 1915, xliv, 53.

Bednarski reports 6 cases of diseases of the optic nerve in children, in which decompressive operations were performed with the following five beneficial results:

Case 1. Rotary nystagmus, divergent strabismus, post-neuritic optic atrophy with oxycephalia; colossal puncture; improved vision. Patient 6 years old.

Case 2. Age 9 years. Bilateral choked disc, paralysis right facial nerve; decompressive trephining was followed by convulsions, coma, and vertigo ten days after operation. Three weeks later colossal puncture and diminished swelling of discs was followed by paralysis of the left upper extremity, cerebral prolapse, and death.

Case 3. Age 11 months. Amblyopia with congenital chronic hydrocephalus; two lumbar punctures with no result, followed by colossal puncture with improved vision and better general condition.

Case 4. Age 4 months. Amaurosis, rotary nystagmus, congenital internal chronic hydrocephalus; lumbar puncture with no improvement; second lumbar puncture caused slight improvement; colossal puncture, followed by improved general condition and no nystagmus.

Case 5. Age 8 years. Neuritic optic atrophy, acquired internal hydrocephalus; colossal puncture; improved vision.

Case 6. Age 5 years. Congenital hydrocephalus; three unsuccessful lumbar punctures.

The author concludes that acquired hydrocephalus, oxycephalus, congenital hydrocephalus, and brain tumor indicate decompressive operations, and adds that the value of the operation in oxycephalus cannot be determined yet with our limited experience, and that in severe cases of hydrocephalus the children usually die. In none of the above cases were there complications or elevations of temperature following the operations. C. A. MAGHY.

EAR

Sawrey, E. R.: Notes on the Causation and Diagnosis of Suppurative Otitis. *Med. J. Austral.*, 1915, i, 286.

As to causation, adenoid tissue, especially in the fossa of Rosenmüller, is mentioned as of prime importance.

As to diagnosis, a routine inspection of the ear drums should be made in all acute infectious diseases and whenever an infant is restless, fretful, and feverish.

As to treatment, every bulging drum should be incised and if, after a fortnight, the discharge does not abate, or earlier if there is a recurrence of symptoms of pain, fever, etc., a mastoid operation should be performed. There is more danger in delay than in the performance of the operation.

In chronic suppurating ears, the radical operation

should be performed if the patient experiences frequent attacks of headache, dizziness, and nausea, or if he is to go where he cannot be kept under the observation of a competent aurist.

OTTO M. ROTT.

Huntington, W. H.: Case of Latent Mastoiditis with Sinus Thrombosis. *Virg. M. Semi-Month.*, 1915, xix, 533.

The title is a trifle misleading, as the report shows the case to have been one of acute mastoiditis and sinus thrombosis due to an acute exacerbation of a chronic suppurative otitis.

The interesting feature of the case is the fact that the symptoms of sinus thrombosis did not appear until after the operation of simple mastoidectomy, and then they were of such a character — a rise of temperature to 100° or so every day at the same time and the general condition remaining so good — that the author felt that there was present a chronic malarial affection. Five days after the mastoidectomy, when the patient exhibited more evidences of sepsis, the sinus was opened and the clot removed.

OTTO M. ROTT.

Davis, E. D.: A Post-Mortem Specimen of a Radical Mastoid Operation Performed Six Months Before Death, to Illustrate Secondary Auditory Tuberculosis in an Adult. *Proc. Roy. Soc. Med.*, 1915, viii, *Otol. Sect.*, 34.

Four months before death the mastoid cavity was examined and found satisfactory. At post-mortem the middle fossa dura mater was found to be thickened, and the exposed area covered by tuberculous granulation tissue. The petrous bone below the dura and surrounding the opening made at the operation was necrosed.

OTTO M. ROTT.

Coulter, C. F., and Pierce, C. H.: The Bacteriology of the Eustachian Tube. *J. Lancel.*, 1915, xxv, 177.

The authors attempt to prove or disprove the theory that the eustachian tube serves merely as a drain for the middle ear, or performs a more delicate and special function of maintaining a sterile positive or negative pressure in the middle ear. They also try to throw some light on the predisposing etiology and pathology of catarrhal affections of the middle ear and tube, of suppurative otitis media and otosclerosis. They describe the method of obtaining cultures from the tube and the results obtained. A sterile silver catheter is sealed at the proximal end with a film of collodion in the same manner as a fiber (Weber-Liel) catheter is sealed. The distance to the isthmus is marked on the latter. With the aid of the nasopharyngoscope, the silver catheter is introduced into the tube mouth and the fiber catheter passed through it to the isthmus, breaking the collodion seal on the way. Through the latter a sterile cotton-wound Yankauer applicator can be passed to any desired point in the tube and the culture obtained.

Five cases of catarrhal otitis were examined in this manner and the tubes on each side of each case were found to be sterile.

Two cases of middle-ear suppuration were found to have sterile tubes, and the conclusion was reached from this evidence that the tubes were not performing the function of drainage.

In seven cadavers, who died from other than ear causes, the middle ears were found sterile.

The authors conclude from these cases that the theory that middle-ear suppurations are caused, or their continuance favored, by infection received through the agency of the tube is false.

GEORGE M. COATES.

Gray, A. A., Wingrave, W., Cheatle, A., and Others: General Discussion on Tuberculosis of the Auditory Apparatus. *Proc. Roy. Soc. Med.*, 1915, viii, *Otol. Sect.*, 35.

GRAY admitted that he occasionally judged a case by the result; if the patient improved he concluded that tuberculosis was not present.

WINGRAVE said that tubercle bacilli were rarely found in the discharge except in the acute cases. In the chronic cases there were, however, acid-fast bacilli having a striking resemblance to tubercle bacilli, but they differed in readily yielding the fuchsin to alcohol after differentiating in H_2SO_4 . They also varied considerably in shape, and while they grew readily on agar, they lost their acid-fast property.

In curettage material giant cells or bacilli were easily seen. Giant cells are very common in chronic tuberculosis, but rare in acute.

The author advises the use of picrofuchsin instead of the Ziehl-Neelsen method.

CHEATLE stated that, in his opinion, the cases of tuberculosis of the temporal bone in infants were generally bovine in origin, and that the infection was due to milk and occurred through the eustachian tube.

WEST said that he believed the greatest point against the prospects of recovery from tuberculosis of the temporal bone was a secondary infection, because the majority of the cases in adults which he had seen recover had had no perforation, and he had never seen a chronically open case of tuberculosis of the ear in an adult recover.

STUART-LOW spoke of some points in the surgery of tuberculous ear disease. He was in favor of operating on the throat first and removing the septic tonsils and adenoids, thus preventing re-infection of the aural cavity after the mastoid operation. If there is an acute mastoiditis, however, this must first be attended to. For removing the discharge from the aural cavity, before, during, and after operation, he employs suction.

GRANT was not in favor of using tuberculin as a diagnostic aid, because he said there was nothing worse than setting up a focal reaction in a bone which was so close to the meninges.

HORNE referred to several factors in favor of the bovine origin of tuberculous disease of the ear.

LAKE said that in adult aural tuberculosis the chance of recovery varied inversely with the acuteness of the chest trouble. It is not wise to operate on the ears when there is active lung trouble.

OTTO M. ROTT.

Fraser, J. S.: Tubercular Disease of the Ear. *Proc. Roy. Soc. Med.*, 1915, viii, *Otol. Sect.*, 17.

The author reports 3 cases as follows:

1. Guinea pigs inoculated from lymphatic glands removed from back of the ear showed definite tuberculosis. Granulation tissue from the ears showed small tubercular areas. The photomicrographs showed a comparatively early stage of tuberculous disease of the ear. The labyrinth involvement through the oval and round windows was just beginning.

2. In the second case the photomicrographs showed advanced tubercular disease of the ear. There had been extensive necrosis of the outer wall of the vestibule and also in the region of the semi-circular canals. The eustachian tube was not recognizable and the tuberculous process had reached the wall of the internal carotid artery.

3. The photomicrographs of the third case showed a fibro-ossifying type of tubercular disease. A considerable tendency was shown toward spontaneous cure of labyrinthitis by the formation of granulation and fibrous tissue in the cochlea and vestibule, and its subsequent conversion into new bone.

Two groups of experiments were made as follows:

1. In 9 cases the following organisms were injected through the tympanic membranes of guinea pigs: staphylococcus aureus, 1; streptococcus pyogenes, 2; pneumococcus, 1; bacillus coli, 2; bacillus proteus, 1; bacillus of distemper, 2. In only 4 out of the 9 cases was otitis media found to be present in the inoculated tympanic cavity at the post-mortem, and in no case was labyrinth suppuration discovered on subsequent examination.

2. In five guinea pigs the tubercle bacillus was employed for inoculation: in 4 cases in pure culture and in one in combination with the staphylococcus aureus. In only one of the 5 cases was there failure to produce otitis media; in one case there was otitis media and slight serous labyrinthitis; tubercle bacilli were present in the middle ear pus. In the other 3 cases there was tuberculous otitis media and labyrinthitis—the inner ear being invaded through the oval and round windows. Seven illustrations show these changes. OTTO M. ROTT.

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Jobson, G. B.: Trifacial Neuralgia from Nasal and Accessory Sinus Disease. *Penn. M. J.*, 1915, xviii, 448.

Jobson calls attention to the great difference of opinion existing among medical men relative to the pathology and treatment of this most painful affection. For years physicians have tried to find some means of giving permanent relief to these sufferers and treatment has varied according to changing ideas of the cause and pathology of the disease. It is known that certain constitutional conditions may cause neuralgia of the trigeminal nerve, but the present discussion is limited to trifacial neuralgia, the result of intranasal and accessory sinus disease. Trifacial neuralgia is a disease of a sensory branch or branches of the trifacial nerve or its peripheral distribution, manifested by pain of a severe, darting, or throbbing character, the seat of the pain being practically always constant. The author disagrees with the opinion of the majority of observers that only a small number of cases are due to peripheral irritation, and he thinks the nasal chambers and accessory sinuses are a frequent and unrecognized cause in many cases.

Aside from sinusitis hypertrophy of the turbinates, especially the middle, is the most frequent cause of this disease. Spurs, ridges, and deflections pressing on the turbinates act in a like manner. Neuralgia from maxillary sinusitis is not as common as from frontal sinusitis, because there is rarely as much pressure from contained secretion in the former as in the latter. Infra-orbital, supra-orbital, and dental neuralgia are not uncommon in antral disease, however. In chronic empyema of the maxillary sinus the pain may resemble migraine or be limited to the surface of the antrum. Supra-orbital neuralgia is frequent in all forms of frontal sinusitis, but neuralgia of sphenoidal origin, although possibly often overlooked, is thought to be not so common. Ethmoiditis more often causes headache than neuralgia, but cases of the latter are not rare. Localization of the seat of the disease is vague and uncertain if dependence is placed on the seat of pain.

GEORGE M. COATES.

Beck, J. C.: Ultimate Results of Operations for Chronic Sinus Disease, Chronic Tonsillar and Tonsillar and Adenoid Disease, and Chronic Diseases of the Middle Ear. *J. Ophth. & Otolaryngol.*, 1915, x, 41.

In the second installment of this article the author takes up the consideration of chronic suppurative sinus disease, and concerning the antrum of High-

more states that if the condition is due to infected teeth or alveolar necrosis and this is attended to there is prompt recovery from the chronic suppuration after very little or no treatment to the antrum proper.

If there are marked degenerative changes of the lining membrane of the antrum with the possibility of necrosis of the underlying bone, more radical measures are employed. At first the natural opening in the middle meatus is enlarged, through which subsequent treatment is carried out, but 50 per cent of cases require more radical work. After doing the Caldwell-Luc or Canfield operation or following the suggestion of Skillern and resecting the bony angle of the aperture pyramidalis, another 40 per cent get well. In the other 10 per cent there should be complete obliteration by the removal of most of the anterolateral wall of the superior maxilla as far around as the zygomatic fossa, thoroughly removing all the lining membrane, thoroughly curetting the remaining bony walls, and stimulating the granulations until the cavity is filled out. Concerning chronic ethmoidal suppuration, the author states that while in a goodly number of cases the end-results are very satisfactory, in the majority of instances, after all has been done that is possible, there is always a little purulent discharge which is much increased with every attack of acute rhinitis.

About 75 per cent of frontal sinus cases are cured by the procedure suggested by Mosher of opening through the floor of the sinus at the time of doing the ethmoidal exenteration. The remaining 25 per cent require the external osteoplastic flap operation. Of these, 30 per cent are cured by simply removing the polypi and retaining the membrane. The other 70 per cent require the removal of lining membrane but retention of the osteoplastic flap, except in two cases, which required removal of the anterior bony wall.

As to the end-results from the Killian operation which the author performed in former years, in every instance a complete cure of suppuration was obtained, but with unnecessary external deformity.

Sphenoid cases gave best results following operation, since that meant nothing more than dropping the bottom out of the cavity. Cures are almost universal.

Concerning the end-results following operation for chronic non-suppurative sinus disease, almost every case was cured of local symptoms of nasal obstruction and headache. The author was not so fortunate in curing the neuralgias nor the general neurotic conditions, although in most of the cases they were improved. Sneezing followed by rhinorrhœa is relieved but not cured. Asthmatic attacks

are often reduced in frequency and severity, but they seldom disappear. The relief from ocular symptoms is one of the most striking results noticed. The sense of smell and taste almost regularly return. As to symptoms referable to sphenopalatine ganglion irritation, the best results have been obtained from medicating the sinuses with 1 per cent phenol, as suggested by Sluder, or injecting the ganglion and the other branches of the fifth, even the gasserian ganglion in severe pain, by 1 per cent phenol in alcohol.

Concerning operative measures in cases of chronic adhesive inflammation of the middle ear, the author states that he has records of 18 cases of ossiculectomy and 9 cases of radical mastoid performed for this condition and results were absolutely negative. These procedures are not used now for this condition.

During the author's first five years of special work he performed nearly 50 ossiculectomies for the relief of chronic suppurative, of which nearly all were benefited. Seven cases operated upon between 1903 and 1905 have to this day remained normal. The remaining cases were operated upon by the radical method or still continue to suppurate.

The cessation of the discharge depends a great deal upon the underlying pathological conditions of the temporal bone, but in simple necrosis of the mastoid with osteofibrosis the result of the radical mastoid operation is rapid and complete cure, and epidermization is smooth and uninterrupted. While the hearing is not destroyed, it is not improved.

As to the Heath or semiradical method, the author has records of 17 children up to the age of 10 who have been completely cured, with normal hearing retained, and of 34 Heath operations from that age up to 50 with not a single permanent cure from the discharge.

The Bondy operation (entering the attic without injuring the annulus tympanicus or disturbing any portion of the ossicular chain) was performed twice with resulting normal hearing but not a dry ear.

In a small number of children the suggestion of Phillips was followed (do the simple operation, drain posteriorly, and allow the cavity to heal without taking away the posterior canal wall) and results were as good as those in which the Heath operation was performed.

As to the Yankauer operation, the author has had but one cure out of 19 cases in which it was used.

OTTO M. ROTT.

Posey, W. C.: Report of an Unusually Large Mucocele of the Frontal and Ethmoidal Cells.
Ophth. Rec., 1915, xxiv, 116.

The patient, a woman 69 years of age, was first examined November 25, 1914, for a supposed growth of the left orbit. There were two lumps the size of beans just below the brow, which coalesced and formed a marked prominence, displacing the eye outward and downward. There was no pain or evidence of inflammation, or any appreciable de-

range of vision. She gave a history of having had nasal catarrh several years before but had not been troubled since. Uncorrected vision was 5/7.5 in the right, 5/9 in the left. The fields of vision were normal. The proptosis of the left eye was about 1.5 cm. in advance of the right.

The periocular swelling eventually reached the size of a hen's egg and was cystic to the touch. The rhinological examination showed a large cystic mass that had apparently destroyed the orbital wall of the frontal sinus. The left nasal fossa was free, although the lateral wall seemed more prominent than usual in the agger nasi region. Transillumination of the antrum was negative. The X-ray report was that the supra-orbital ridge was completely absorbed and the sinus enlarged upward on the frontal bone.

An external operation was performed with the incision through the brow and the sac exposed, the walls of which were found to be composed of thickened periosteum, which was filled with the frontal sinus contents. The bone of the anterior wall and floor of the sinus had entirely eroded away, and the ethmoid cells were exposed on the removal of this sac. These were partially exenterated and drainage established into the nose. The posterior wall was also eroded and the meninges were separated from the sinus only by the periosteum. Healing was prompt and without incident. In two weeks the wound was closed and the excursions of the eye were normal. Uncorrected vision was now 5/7.5 in each eye.

GEORGE M. COATES.

THROAT

Savage, M. M.: Systemic Infections for Which the Tonsil is Held Responsible and Control of Hæmorrhage During Tonsillectomy. *Maryland M. J.*, 1915, lviii, 27.

The author cites the following general infections for which the tonsil is held responsible. Chronic arthritis, endocarditis, pericarditis, chorea, acute and chronic nephritis, neuritis, osteomyelitis, appendicitis, peritonitis, cervical adenitis, chronic toxæmias, acute and chronic ear conditions.

The following indications for tonsillectomy are mentioned:

1. Large adenoids, even with small tonsils, when they show some evidence of disease.
2. Recurrent attacks of tonsillitis or peritonsillar abscess.
3. Hypertrophied tonsils when they are large enough to cause improper oxygenation.
4. Ear complications.
5. Impairment of voice and speech.
6. Systemic infections.
7. Chronic coughs, bronchial affections, and interference with the general development of the child.
8. Enlarged cervical glands.

The author mentions three reasons why the operation has fallen into disrepute:

1. Removal of the tonsils without a definite indication.

2. Tonsil tissue still present or return of symptoms for which the operation was done after the tonsils were supposed to have been removed.

3. Danger of the operation.

As to the first, it stands to reason that there should be no operation without an indication.

As to the second, there can be no return of symptoms if the tonsil has been completely enucleated in the capsule.

As to the danger of the operation, this is conceded, especially the danger from hæmorrhage, and it is upon this point that the author dwells, urging that the bleeding points be caught with forceps and that ligation be done just as in abdominal surgery, not relying upon pressure to stop the bleeding.

OTTO M. ROTT.

Balfour, D. C.: Tonsillectomy in Children. *Ann. Surg., Phila.*, 1915, lxi, 257.

The author removes tonsils by introducing the index-finger behind the posterior pillar of the tonsil and by firm pressure puts the anterior pillar on the stretch. Then with blunt dissecting scissors or tissue forceps the pillar is well freed from the anterior surface of the tonsil, and by continuing the pressure from behind the tonsil is forced well forward and grasped with a tenaculum. With this the tonsil is turned over and the posterior pillar exposed and freed by blunt dissection. The superior pole is then enucleated from the superior tonsillar fossa and the tonsil rolled out of its bed by blunt dissection.

OTTO M. ROTT.

Thomson, St. C.: Intrinsic Epithelioma of the Larynx One Month After Laryngofissure. *Proc. Roy. Soc. Med.*, 1915, viii, *Laryngol. Sect.*, 33.

In this case the whole of the left vocal cord was shown to be replaced by a red, knobby, ulcerating infiltration.

At the operation the growth was found to be limited to the central three-fifths of the cord, which was clipped out intact, including the vocal process of the arytenoid.

The pathologist's report showed that posteriorly the growth had spread right up to the line of excision in the subglottic area, and another operation was performed and a sweep of tissue in this area removed, which showed microscopically that it was the end of the malignant growth. A week later the patient was able to walk out of doors.

Concerning the technique of the operation, the author states that the line of incision was injected with eudrenine, a mixture of adrenalin and eucaine. Chloroform was also used. The incision was carried down to expose the thyroid and trachea, and because of the preliminary injection of eudrenine, no vessel required tying and only one had to be clamped. Before opening the trachea it was stabbed with a hypodermic needle and a 2 per cent solution of cocaine was injected. This abolished the spasm which is wont to occur on opening the trachea, causing a spur of blood and mucus. After

waiting a little while tracheotomy was done and the tube inserted without any reaction. The thyroid was then split and a tethered sponge inserted to prevent blood getting into the air passages. The growth was then taken out whole.

OTTO M. ROTT.

Milligan, W.: Laryngeal Papillomata in Children. *Med. Chronicle*, 1915, lx, 273.

The growths are removed by suspension laryngoscopy, with the patient under a general anæsthetic. Where dyspnoea is severe a preliminary tracheotomy is advisable. The child should be placed in the dorsal position with head slightly extended; the interior of the larynx should be sprayed or painted with a 3 to 5 per cent solution of cocaine in order to relieve laryngeal spasm. For the removal of the growths a laryngeal forceps, as Paterson's, or a curette, is employed. The raw surface left should be at once painted with a 1 per cent solution of salicylic acid in spirits or seared with a fine galvanocautery point.

To prevent the local recurrences so frequently met with, the author recommends the local employment of radium or mesothorium, a capsule containing the salt being introduced into the larynx after complete removal of the growth has been effected.

OTTO M. ROTT.

Killian, G.: Suspension Laryngoscopy. *Clin. J.*, 1915, xlv, 89.

The author describes in great detail the various parts of his instrument, then speaks of illumination; preparation of patient; morphine-scopolamine narcosis; preparation of instruments; introduction of tongue spatula; the view of the buccopharyngeal cavity and of the larynx. As to practical applications, besides affording an excellent method for demonstration purposes, the author mentions the following conditions for which his new method is applicable: laryngeal papillomata in children; vocal cord nodes in children; tubercle, syphilis, difficult decannulement in childhood; foreign bodies in children; laryngeal tuberculosis in adults; benign growths of the larynx in adults; cancer of the larynx in adults; new-growths and foreign bodies in hypopharynx.

OTTO M. ROTT.

MOUTH

Ivy, R. H.: Mesothelial Tumors of the Jaws. *J. Am. M. Ass.*, 1915, lxiv, 40.

The present report is made largely from cases occurring in the oral service of Cryer. Most of the growths under consideration are known as epulis, a term, however, which should be discarded. They occur as hard or soft tumors (papilloma, epithelioma, etc., not included), depending upon the consistency of the tumor tissue.

In the soft variety there may be a hard shell of bone covering a part of the tumor, but the tumor tissue itself is soft.

The hard variety is always of slow growth, developing in months or years.

They are usually sharply circumscribed, but may be pedunculated, the gum covering them may be slightly reddened or of normal color.

The soft variety is usually of rapid growth, bulging beyond the gum tissue, and one can observe that their origin is from the interior of the bone. There may be a bulging shell of bone covering the growth. In color these tumors are dusky red and occupy a sharply defined cavity in the bone. The teeth may be displaced or loosened by either variety.

The hard epulis is a pure fibroma, and the microscope shows an outer layer of the normal stratified epithelium and submucosa, the deeper portion consisting of an interlacing network of fibrous tissue; at times a myxomatous degeneration or even bone formation is present. These growths spring from the periosteum lining the alveoli.

The soft tumors, which are classed as giant-cell sarcomata or myelomata, show a covering of mucous membrane, beneath which is a stroma of fibrocellular tissue which resembles fibrosarcoma, with a greater or less number of giant-cells scattered throughout. The nuclei of these cells are numerous and are grouped near the center of the cell. Small masses of bone may be present also.

Considerable diversity of opinion exists as to the classification of these growths, and the author cites the opinions of various pathologists regarding them.

The author favors the opinion of Mallory that the giant-cells are foreign-body cells similar to osteoclasts and contents, and that they are signs of benignancy, in that similar tumors showing no giant-cells have proven to be malignant.

Whitman has described a tumor rich in giant-cells which is malignant which is a proliferation of vascular endothelial cells, many of the giant-cells lying within the lumina of blood-vessels. This latter type, exemplified by a case here reported, does not lie in sharply defined cavities in the bone as does the previously mentioned one, but invades the bone and has a tendency to recur.

Microscopically the author's case showed a proliferation of capillary endothelial cells to form the stroma of the tumor and numerous spaces, evidently dilated capillaries, which contained foreign-body giant-cells.

The term sarcoma applied to such cases has led to much mutilation of the jaws, especially in the first type, while the second type requires a more extensive operation. The author reports 6 cases, 5 of which are of the first type and one of the second. His conclusions are as follows:

1. Epulis tumors may be classified as hard or fibrous, and soft or giant-cell.

2. Giant-cell tumors of the jaws fall into two classes: (1) the giant-cell or myeloid sarcoma; (2) the giant-cell endothelioma recently described by Whitman.

3. Tumors of the first type may be regarded as benign and require only the removal of the growth.

4. Tumors of the second type are more malignant and require more extensive operation.

H. A. POTTS.

Goldstein, M. A.: Angioma of the Uvula. *Laryngoscope*, 1915, xxv, 90.

The method of removal was as follows: After anesthetizing the mass with novocaine-adrenalin by hypodermatic infiltration, an 8-inch widely curved uterine hæmostat forceps was clamped well above the upper tortuous vessels, and a large aneurism needle threaded with a double strong silk suture was passed from behind through the palate and two ligatures firmly tied on either side, the outer curve of the clamped forceps preventing the slipping of the ligatures. With a bistoury curved on the flat the tumor was removed, the lower curved edge of the clamp being used as a guide.

The clamp was left in position several hours, the sutures being removed on the third day. There was no bleeding and the healing was smooth. The operation was performed in the spring of 1910, and the author reports no recurrence and speech normal.

OTTO M. ROTT.

Eastman, J. R.: Factors of Safety in Cleft-Palate Surgery. *Surg., Gynec. & Obst.*, 1915, xx, 91.

In the Langenbeck or similar flap operations there will be much less likelihood of separation of the wound margins and consequent failure of union, if the mattress coaptation sutures, after being reinforced by a simple running suture, are further supported by a continuous immobilizing suture passing around the free edge of the anterior palatine arch. The immobilizing suture may be introduced as a series of knotted loops or as a running buttonhole suture. The former is more secure. The knotted suture is introduced by passing a small curved needle bearing a long linen or hemp thread through the edge of the anterior palatine arch on one side near its base; that is, near the side of the tongue. The thread is drawn to its middle and secured with a reef-knot, leaving the tail of the suture long. At a distance of three or four millimeters from the first or outermost knot, the needle is again passed through the edge of the arch, the tail of the suture being taken up and another reef-knot tied. This process is continued around the anterior palatine arch to its base on the opposite side, the suture crossing in front of the base of the uvula.

Local anesthesia not only protects against shock by minimizing hæmorrhage but also, as Crile has taught us, by acting as a nerve-block. If the solution used is not too strong, that is, not stronger than an aqueous solution of 0.5 per cent of novocaine, —1:200—with 0.02 per cent of adrenalin—1:5,000—the danger of slough is inconsiderable. In the newborn, ten to twenty drops of this solution on each side suffice to induce anesthesia and blanch the tissues.

Fever after palate operations varies directly according to the severity and duration of the operation; that is, the more blood swallowed the greater the pyrexia. The introduction of a medium-sized male catheter, and thorough rinsing of the stomach, should be done promptly after palate operations.

In case of a normally high palatal arch, if the cleft be not too wide, it is useless to make paralyzing incisions for the relief of tension, for the two halves of the loosened mucoperiosteal palate will fall together like the two halves of a cantilever drawbridge, and may be sutured without tension if the soft palate be quite completely separated from the hard palate at the posterior border of the latter, as advocated by Berry. Lateral incisions are rarely of value. With curved scissors it is nearly always possible to free an abundant flap by beginning at the root of the split uvula on each side and cutting forward on the nasal side of the edge of the cleft.

Freundlich, D. B.: The Teeth as a Primary Factor in Diseases of the Ear, Nose, and Throat; the Diagnostic Value of Coöperation of the Otolologist, Rhinologist, and Laryngologist with the Dentist. *Laryngoscope*, 1915, xxv, 40.

The author claims that the teeth are a far greater etiologic factor, primary or secondary, in pathological conditions of the ear, nose, and throat than is generally understood. Many obscure cases can be diagnosed only by means of a radiograph.

He reports several cases of empyema of the antrum, persistent neuralgia, earache, and persistent sore throat which were dental in origin and where coöperation between the physician and dentist was of mutual benefit in making a diagnosis.

ELLEN J. PATTERSON.

Lydston, G. F.: Precancerous Lesions and Transition Types of Malignant Disease of the Tongue and Their Relation to Syphilis. *Am. J. Surg.*, 1915, xxix, 33.

Lydston presents a very good article, reporting a few cases which have been summed up very well in his conclusions, which are as follows:

1. Syphilis, via the so-called "precancerous" conditions, such as leucoplasia and gumma, with associated chronic diffuse glossitis, is the most potent factor in making dynamic the predisposition underlying cancer of the mouth and tongue and probably also of the throat.

2. Alcohol and tobacco — especially the latter — and the local irritation produced by treatment of syphilis or by bad teeth, or both, are most potent factors in the etiology of cancer in syphilitics.

3. The local conditions furnish the exciting cause of cell proliferation and the syphilitic constitution supplies the perversion of cell nutrition through which the cancerous predisposition becomes dynamic.

4. Through the operation of the etiologic factors just mentioned, the syphilitic cell infiltration and

the scar tissue produced by it are replaced by malignant cell growth.

5. The best prophylaxis of precancerous lesions is afforded by rational constitutional treatment, avoidance of local irritation, careful mouth surgery and hygiene, and total abstinence from alcohol and tobacco.

6. The best prophylactic of cancer of the oral cavity — and especially of the tongue — as a concomitant of syphilis, is excision of all obstinate chronic lesions of the mucosa and sublying tissues, whether regarded as characteristically syphilitic or not.

7. The best time for operation in suspicious lesions of the tongue is before the diagnosis of malignancy is definitely established. Operation upon precancerous lesions is much more effective as a lifesaver, on the average, than is operation upon indubitable cancer.

8. Neither the microscope nor the Wassermann should rule the surgeon in doubtful cases. In experienced hands, the clinical diagnosis, even admitting that occasional errors are probable, is safer in the long run than reliance upon laboratory methods, especially if the surgeon is even a fairly competent syphilologist.

9. In lesions of lesser magnitude, operations may be limited, but resection of half or all of the tongue — according to the location and extent of the lesion — is indicated in those of greater magnitude, and invariably when the diagnosis of cancer is clearly established.

10. The tissues beneath the jaw always should be cleansed out in the more extensive tongue excisions. This should include the removal of the salivary glands.

11. The average of successes from tongue resection, and the average longevity of the subjects operated upon, will be higher or lower according to whether the profession is dominated by sound surgical judgment and experience — with its obvious corollary, practical common sense — or by laboratory reports. In brief, the oftener we operate on "suspicion" justified by careful clinical study of lesions of the tongue, the better for humanity.

HENRY J. VAN DEN BERG.

Arrowsmith, H.: Cavernous Angioma of the Tongue. *Laryngoscope*, 1915, xxv, 94.

The tumor occupied the middle third of the left half of the tongue. In removing the tumor, a deep silk suture was passed through the left lateral half of the tongue behind the swelling to control possible bleeding. Four similar sutures surrounded the tumor, but were not tied until the relatively solid tumor was dissected out, and they then served to approximate the edges of the mucous membrane. A week later all sutures were removed and the wound was healed. The patient was a girl 12 years of age, and the tumor had been present from birth.

OTTO M. ROTT.

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INTERNATIONAL ABSTRACT OF SURGERY

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COLLECTIVE REVIEW

PREGNANCY AND TUBERCULOSIS

A RÉSUMÉ OF THE LITERATURE FROM 1904 TO 1915

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I. OCCURRENCE OF PREGNANCY IN THE TUBERCULOUS

SCIENTIFIC obstetricians are agreed that safety to the mother should precede any consideration of the child when one must be sacrificed at the expense of the other. If this custom be adhered to in the question of pregnancy complicated by tuberculosis, the birth-rate in certain localities would fall far below the normal. According to Bacon of Chicago, 25 to 29 per cent of all women in the childbearing age, i.e., between 15 and 50 years, die of pulmonary tuberculosis. This would indicate that each year there are between 22,000 and 44,000 gravidæ in the United States who have active pulmonary tuberculosis in one of the three stages. If latent cases be included, this number would be materially increased.

Volumes have been written upon all phases of the tuberculosis question, but practically nothing has been done for the unfortunate gravida who has pulmonary tuberculosis. Sanitaria, dispensaries, floating hospitals, "rest homes," etc., have been provided for those suffering from pulmonary tuberculosis. Rich or poor may receive adequate attention, yet no such provision has ever been made for pregnant women who are the subjects of pulmonary tuberculosis, although guidance through the pregnancy, scientific supervision of the labor and puerperium, with proper care of the child, and finally sanitarium treatment for the mother should be provided.

II. EFFECT OF TUBERCULOSIS UPON PREGNANCY

The effect of tuberculosis on the course of pregnancy is practically nil. Emil Sergent states that tuberculous women seldom become pregnant and that if pregnancy does occur abortion is rare even in advanced tuberculosis with cavity formation. Other observers do not believe that this statement is applicable to the milder forms of pulmonary tuberculosis, but agree that the more advanced cases have a lessened susceptibility to impregnation. However, to quote Lobenstine, it is reasonable to suppose that abortion is more common in the tuberculous than in the non-tuberculous woman. This may be due to the cough and hæmoptysis, to vomiting, or to a sharp rise in temperature. An endocarditis or a considerable tubercular involvement of the decidua or placenta may cause an abortion during the first trimester. Formerly the tendency to premature labor was thought to be even greater than to abortion or miscarriage, but recently this statement has not been substantiated. Both DeLee and Williams state that the disease does not predispose to premature interruption of the pregnancy unless the pulmonary lesion be of the florid, fulminating type. In such cases the cough and hæmoptysis, fever, vomiting, tubercular infection of the placenta or decidua, placental hæmorrhages, etc., may precipitate a premature labor.

In the mild cases going to term we find that the labor may be completed without cause for

alarm, while in the advanced cases labor may be tedious, prolonged, and fraught with many dangers to the mother: e.g., dyspnoea, cough, hæmoptysis, impending cardiac failure, pulmonary œdema, pneumothorax, and, rarely, general dissemination of the infection through the lungs.

Upon the puerperium mild inactive pulmonary tuberculosis seems to have no effect *per se*: hæmorrhage is no greater and involution is not retarded. In the more active and progressive cases there is apt to be excessive hæmorrhage and involution may be tardy. These ill-effects, no doubt, are due to the general asthenic condition of the woman at this time.

III. EFFECT OF PREGNANCY ON TUBERCULOSIS

The effect of pregnancy upon tuberculosis is variable. Naturally the extent of the tuberculous lesion, the existence of complications, and the hygienic surroundings of the patient will determine in a large degree the ultimate results. In susceptible women with tubercular tendencies statistics show that pregnancy is directly responsible for the development of pulmonary tuberculosis. Furthermore, a dormant pulmonary tuberculosis may be rekindled and assume activity with renewed energy. Trembley of Saranac Lake states that in a series of 240 tubercular women, 63 per cent attributed the beginning of their tuberculosis to pregnancy and parturition. Fishberg, in a series of 286 tubercular women, found that 37.4 per cent developed tubercular symptoms following childbirth. Jacob and Pannwitz, quoted by Lobenstine, claim that in 337 cases of tubercular women 25 per cent traced the origin or aggravation of the disease to pregnancy, while Marogliano, in 385 cases, found 59 per cent who attributed the beginning of their tubercular career to the ordeal of pregnancy and labor.

In those women who have long been the subjects of tuberculosis, particularly the inactive first and second stage cases, pregnancy seems to improve their general condition. If they pass through the first three months without aborting, they may continue with improvement and come to term in fairly good condition. On the other hand, they may during the last three months of pregnancy lose ground and become gravely ill with difficulty in breathing, a consuming cough, hæmoptysis, loss of weight, with general weakness and exhaustion. In cases in the third stage with an exhaustive cough, hæmoptysis, and fever, the prognosis is always bad and death may occur at any stage of the pregnancy, labor, or puerperium. Lobenstine, in the Bulletin of the

Lying-in-Hospital of New York, claims that 38 per cent of their cases were seriously affected by parturition. Lebert states that 75 per cent of tubercular women are badly influenced by pregnancy and the puerperium. Kaminer found that 66 per cent of his active cases either died or were made decidedly worse, while the mild cases did not show any bad effects from the pregnancy and labor. H. von Bardeleben writes that the average number of women who grew worse under such conditions, judging from the communications of 14 correspondents, was 71 per cent; the fatal cases, according to the statements of 19 correspondents, averaged 47 per cent.

Practically all observers agree that labor and the puerperium are the periods of greatest danger to the woman. During labor sudden death may occur from cardiac failure, pulmonary œdema, or pulmonary hæmorrhage. During the puerperium the tuberculosis may become fulminating and cause death in a surprisingly short time. Schlimpert, with his great experience in dissection, asserts that the greatest number of deaths from tuberculosis during pregnancy occur in childbed. Accidents during the puerperium are liable to occur in all types of tuberculosis with active lesions and sometimes of only moderate severity. In other words, the puerperium is a period of "watchful expectancy," for one can hardly expect to prognosticate correctly in any case, latent or active, where the uncertainty of the reaction is so great.

While the influence of pulmonary tuberculosis on pregnancy allows of a difference of opinion among authorities, all observers are agreed that laryngeal tuberculosis is a source of the greatest danger to both mother and child. According to Imhofer, the prognosis in tubercular laryngitis complicating pregnancy is extremely unfavorable—the mortality being 86 to 90 per cent. Kuttner also claims a 90 per cent mortality. Stoeckel, Lasogna, Pankow and Küpferle, Lubliner, von Sokalowski, and others, have in former years made reports that essentially coincide with the present day observations. Lobenstine says that abortion and premature labor are especially prone to occur in laryngeal tuberculosis, and, furthermore, about 75 per cent of the children die either during labor or soon after.

IV. EFFECT OF TUBERCULOSIS UPON THE FŒTUS

Regarding the effect of tuberculosis upon the fœtus, there is positive evidence that tuberculosis may be transmitted direct from mother to child. Congenital tuberculous infection,

according to Charles Norris, may be due to the spermatozoön or the ovum—a germinative infection; or the foetus may subsequently become infected through a material bacillæmia; or infection may be the result of direct extension from neighboring structures either by continuity or through adjacent lymph-channels.

Norris further states that tubercular bacilli have never been found in a spermatozoön, but that he believes it is possible for a tubercular bacillus to become attached to a spermatozoön at any point along the path of its progress from the testicle through the vas deferens, urethra, external surface of the penis, vagina, cervix, uterus, etc. It is, therefore, possible, theoretically at least, for an ovum to become invaded by an infected spermatozoön.

As to the hæmatogenous mode of infection there is no question, and what follows will clear up the cloud of doubt in this regard. Again, tubercular bacilli, by extension from the fallopian tubes or cervix may infect the decidua and from thence by continuity reach the placenta. Also a lymphatic infection from some adjacent tuberculous lesion may occur. Therefore, in either of these ways a tubercular infection may eventually reach the foetus.

Hauser, in 1898, found in the literature reports of 18 cases of congenital tuberculosis. Martha Wollstein, in 1905, reported a case of "proved congenital tuberculosis." Novak and Ranzel claim that in 70 per cent of the cases of positive tuberculosis the placenta contain tubercular bacilli. Schmorl and Geipel assert that in 45 per cent of known tubercular women the placenta contain tubercular bacilli. Charles Norris states that from a summary of 67 cases of maternal tuberculosis gathered from the literature 30 per cent presented positive evidence of tubercular bacilli in the placenta. In a personal communication Norris says that he has found 20 per cent of the placenta of positively tubercular women to contain tubercular bacilli and furthermore believes that it is possible for tubercular bacilli to be transmitted through a normal placenta.

Granted that the child may be infected *in utero*, must the infection be active from the time of its inception or may it not remain dormant and inactive? Sitzenfrey, with other observers, believes that the infection may remain latent and inactive for a prolonged period of time—2 to 3 years and even longer. Behring even states that pulmonary phthisis in adults is frequently the result of infection acquired during childhood. In the vast majority of instances, however, it may be stated that the tuberculous infection is

active from its inception, because, as we shall point out later, from 50 to 70 per cent of these children die during the first year of life.

Furthermore, granting that the transmission is not direct, inherited predisposition and infection in the family must be seriously considered. Trembley claims that the offspring of tubercular parents are weak and display a scrofulous diathesis. A. Jacobi says that 70 per cent of these infants succumb during the first year of their existence. Weinberg states that 67.9 per cent of infants born of tubercular parents die within the first year. Likewise Zirkel claims a 58 per cent mortality for the first year, while Pankow and Küpferle state that 54.5 per cent of these children die before the twelfth month of life. Miller and Woodruff of New York examined 150 children born of tubercular parents and found that 51 per cent of these were positively tubercular, 20 per cent were doubtful, and 29 per cent were not tubercular. Floyd and Bodwitch of Boston showed that 36 per cent of children born of tubercular parents had signs of lung tuberculosis and 30 per cent showed signs of the infection elsewhere—a total of 66 per cent showing tuberculosis in some form.

V. LACTATION IN THE TUBERCULOUS

Of all the questions regarding the effects of pregnancy upon tuberculosis, there is one phase that demands most careful consideration; viz., nursing. The objection to nursing is the danger of infecting the child and the added drain upon the mother's strength. The mother needs all of her reserve force to fight her infection. The child born a weakling and thus handicapped at the outset must have the very best nutrition in the most wholesome surroundings. Women in the first stage with mild inactive pulmonary lesions may be allowed to nurse a puny, inactive baby for a few weeks—6 to 12—if at the end of that time artificial feeding is substituted. If the baby is robust and active, nursing should not be allowed at any time. A. Jacobi maintains that the baby may nurse in the latent or incipient cases if it be separated from the mother immediately after each nursing. If, under such conditions, the mother begins to lose weight and decline in strength, the baby must be weaned. E. Sergeant, Lobenstine, and others would not allow the baby to nurse under any consideration if the mother is known to have pulmonary tuberculosis.

The wet-nurse is the ideal substitute for mother's milk. Where she is not available, for financial or other reasons, modified cow's milk is the next choice. If the baby fails to properly

consume modified cow's milk, some one of the commercial "baby foods" may be substituted. Admitting that from 50 to 70 per cent of the children born of tubercular parents and who remain in contact with them, contract the disease, isolation and artificial feeding, under competent supervision, would seem the best solution of the problem. This procedure would undoubtedly give the mother a better chance of recovery; the child, if not already infected, the best chance to remain uninfected.

VI. PROPHYLAXIS IN PREGNANCY AND TUBERCULOSIS

In the prophylactic consideration of pregnancy complicated by tuberculosis there are two problems which confront us. First, the prevention of infection of a woman who is already pregnant or who is apt to become pregnant, and second, the prevention of pregnancy in a woman who has tuberculosis. A man with tuberculosis should not marry, for in such a case he immediately becomes the chief source of infection for the woman. If the husband should acquire tuberculosis after marriage, sanitorial treatment is the best means of protection to his family. If not cured he may at least learn how to "live and let live."

Relative to the second issue in prophylaxis all authorities are agreed that a woman with active tuberculosis should not marry. If she marries, instruction in the methods of the prevention of conception becomes the duty of her physician. This may be accomplished by (1) abstinence from coitus; (2) by the use of preventive measures; and (3) by artificial sterilization. The first two of these need not be discussed. Either may or may not accomplish the desired end, depending on the temperament of the contracting parties. Both are usually failures in the end. This brings us to the more or less complicated question of artificial sterilization. This may be accomplished in three ways: (1) by ligation of the tubes — implanting the uterine end beneath the peritoneum or in the broad ligaments; (2) by castration; (3) by hysterectomy.

The first method may be termed a temporary method of sterilization, because if at any time following such a procedure the woman was cured of her tuberculosis and wished to again become pregnant, the tubes could be reinserted into the uterus and thus give her a chance to conceive again.

According to Bacon of Chicago, this operation may be performed at the same time that the abortion is done, provided the pregnancy has

not progressed beyond the twelfth week. If farther advanced, the abortion may be done at one sitting and the sterilization operation several weeks later. Schauta also shares in the belief that such a procedure is the correct one to follow. On the other hand, Schenck of Detroit is not convinced that sterilization, in any but the rarest cases, is ever justifiable.

Castration or hysterectomy naturally renders the woman absolutely sterile. Bumm and Martin recommend the combination, holding that removal of the ovaries helps to overcome the tuberculous process by adding fat and strength to fight the infection. Others deny this belief and maintain that the artificial menopause thus produced is an actual detriment to the patient with tuberculosis. Certainly the combination is unnecessary in most cases and it would seem advisable to give hysterectomy the preference over castration wherever possible. Von Bardeleben would do a vaginal excision of the fundus uteri and placental site, leaving the ovaries behind.

The method of atmocausis, advocated by Pincus, has been used, but without favor. Sterilization by means of the röntgen ray has been tried, particularly in Germany, but has not been universally successful.

When both husband and wife have tuberculosis, vasectomy should be performed on the husband. Knopf believes that every man who has active pulmonary tuberculosis should have a vasectomy performed; likewise every woman salpingectomy.

VII. TREATMENT OF PREGNANCY IN THE TUBERCULOUS

The active treatment of pregnancy complicated by tuberculosis naturally divides itself into (1) the general and (2) the obstetrical.

The general treatment includes such dietetic, hygienic, and medicinal measures as may benefit any case of pulmonary tuberculosis. Nothing further need be said regarding the detail of this treatment.

The obstetrical management includes (1) the question of the interruption of pregnancy and (2) the methods by which interruption is best accomplished.

According to Bacon of Chicago there are two indications for the induction of abortion in these cases. They are: (1) the vital indication, when it is necessary to save the life of the gravida who is in immediate danger of dying; and (2) the prophylactic indication, when abortion is done to prevent the progressive development of the disease which may be expected to occur from

gestation and labor. The first indication, as Bacon states, will be rare. Practically all therapeutic abortions will be done for the prophylactic indication.

During the first three months of pregnancy therapeutic abortion is indicated for all proven active cases of pulmonary tuberculosis. The earlier the intervention the better the prognosis. An inactive or healed pulmonary lesion is no indication for interference, provided the patient is in good general health. Advanced cases should be aborted early and sterilized by any suitable method the surgeon may choose — preferably abdominal or vaginal hysterectomy (Bacon, Bumm, Martin, Lobenstine, Heil, von Bardeleben, and others). Even when done early, interference is not attended with any great success. Veit has shown that 43 per cent of such cases do badly, while von Bardeleben states that 50 per cent of his cases died following therapeutic abortion. From the fifth to seventh month artificial interruption is not to be undertaken, except in progressive cases where the woman is steadily growing worse. Hysterectomy (Bumm) or vaginal excision of the body of the uterus and placental site (von Bardeleben) should be done, following the emptying of the uterus. This may be done at once or a few weeks later. For the very grave, rapidly failing cases, during the second and third trimesters, nothing can be done that will better conditions. "Watchful waiting" may seem cowardly, but operative interference is almost sure to terminate fatally.

Beyond all this statistical study there is still a very important phase of this question; viz., individualization. As Bacon puts it, "The correctness of the conclusion must depend on the ability of the physician to form a correct judgment." Furthermore, "assuming that the physician possesses a good theoretical knowledge of the premises and an acute sense of his responsibility, yet he must have experience." Experience only can give one the required skill to individualize intelligently. Experience means the observation of hundreds of cases and thus it becomes apparent that the wise counsel of a good internist and the statistical data at hand must be employed if we are to give the patient the best that is within our power.

The method of interrupting the pregnancy and the conduct of labor at or near term constitutes a very important phase in the treatment of pregnancy complicated by tuberculosis. First of all the best method of interruption is that method which causes the least trauma and shock to the mother. The fetus can usually be dis-

regarded. Interruption must be done early to be of value to the tubercular mother. Induction of premature labor, where the pulmonary condition is active and progressive, is the correct procedure. Nevertheless, the mother will have suffered the ravages of pregnancy, plus the tuberculosis, before this period will have been reached. The baby is born a weakling, probably "congenitally tuberculosed," and thus begins life under added difficulties.

Interruption during the first 12 to 16 weeks had best be done by a preliminary 24 to 36 hour pack of the cervix and vagina, followed by dilatation and curettage under light ether or ether-oxygen anaesthesia. A. Martin states that the method of terminating the pregnancy is irrelevant, provided it is done in an aseptic manner and without loss of blood. Bossi of Genoa urges rapid mechanical dilatation, followed by curettage, and states that in 40 cases terminated in this manner before the sixth month there was a marked improvement in the pulmonary disease. In 23 cases treated in like manner, after the sixth month, very few were improved. Bacon of Chicago recommends anterior hysterotomy for the experienced surgeon but thinks the general practitioner will have less risk with dilatation and curettage. Sterilization by any of the methods discussed above is advised after emptying the uterus. When interference is done between the twentieth to twenty-eighth week, anterior hysterotomy (vaginal caesarean) is the operation of choice. Bumm recommends hysterectomy, leaving the ovaries, if possible, in every pregnant woman who has pulmonary tuberculosis. Heil agrees with Bumm and adds that to avoid the evil results of a general anaesthetic, lumbar or conduction anaesthesia should be employed. Von Bardeleben excised the placental site per vaginam in 40 cases during the first four months of pregnancy and in 8 cases of laparotomy, from the fifth month onward, without a single fatality. In the active and progressive types of pulmonary tuberculosis, following abortion, during the first four months, Lobenstine advises the employment of abdominal or vaginal hysterectomy. Furthermore, in the later months of pregnancy where the tuberculosis is progressive and interference must be resorted to, hysterectomy gives the best results. If the pregnancy has been carried to or near term, the labor should be made as easy and short as possible. Bacon recommends rupture of the membranes and metreurysis with pituitrin as the quickest mode of delivery. Vaginal caesarean section, in expert hands, offers quick relief.

Trembley recommends forceps delivery as soon as the cervix is sufficiently dilated. Finally "twilight sleep" may supply a long-felt want in these tuberculosis cases, for under its influence the woman may pass through her labor with the least physical effort.

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INFECTION OF GUNSHOT WOUNDS

By COLONEL LOUIS A. LAGARDE, MEDICAL CORPS, U. S. A., RETIRED

THE nature of the infection in gunshot wounds is no different from that in other wounds that have become contaminated by infective matter. We all know, however, that infection in a wound is largely due to contributing factors that have to do especially with the characteristic features of the wound, and to environment. In order to illustrate our meaning let us take a compound fracture of the tibia of the middle-third such as we find in a civil hospital resulting from traumatism common to such cases, and let us compare the features of such a wound with those of a compound fracture by a fragment of shell, a shrapnel ball, a rifle bullet, or any of the projectiles used in hand weapons when animated with high or even medium velocity, such as one finds among war wounds.

The compound fracture in the civil hospital is most likely oblique, with few or no isolated spicules of bone. The traumatism to the soft tissues is confined to the immediate vicinity of the solution of continuity in the bone. The wound in the skin, be it large or small, is necessarily infected by the unclean skin and clothing of the patient. The infection is superficially located at first, and the environments being favorable and under the control of the surgeon the patient is taken at once to a well appointed hospital, where the surgeon treats the case in accordance with the rules of modern surgery. He washes away the infection which is superficially located, exposes any pocket or recess in which infection is likely to lodge, and irrigates the surfaces thereof and those of the wound generally with a suitable antiseptic, and then dresses the part with a clean dressing, places the limb in a fixation splint and awaits developments. In the large majority of cases the outcome will be satisfactory. If signs of infection appear the surgeon takes off the dressings, irrigates the wound again, redresses it, and, still maintaining fixation, has every reason to look for a good recovery.

Let us compare this picture with that of a compound fracture of one of the long bones by gunshot. As an extreme example we might consider the lesion which we generally find in a gunshot fracture of the diaphysis of the tibia at close range — within 100 yards — by any of the reduced caliber military rifles the ballistic values of which are very much the same. At such a

range the wound exhibits what military surgeons have designated as a lesion with explosive effects. The injury to soft parts is not limited to the immediate foyer of fracture in the bone as we find it in nearly all cases of fracture from traumata in civil life. At the moment of impact against the hard cancellous bone substance the part was hit by a bullet traveling at the rate of about 2,500 f.s. while exerting an energy of about 2,000 foot pounds. The force caused comminution and pulverization of the bone substance. Particles of bone varying in diameter from a grain of sand to one-half inch or more in diameter were driven into the tissues in all directions — in the line of flight of the bullet, as well as laterally and even in the reverse direction to the line of flight, since one will often find bony sand at the wound of entrance in the skin. Particles of bone have been driven into the soft parts as much as two and three inches away from the area of fracture. If the projectile has become impaired or any of the lead has escaped from the steel casing, the metallic particles are also dispersed into the tissues in all directions, like the particles of bone substance. The metallic and bone particles having received part of the energy of the projectile have acted as secondary missiles, and have each in turn caused a lesion corresponding to the size and velocity of the individual fragment. The wound of *entrance* in such an injury usually corresponds to the diameter of the bullet; it is generally round or oblong in shape, depending upon the angle which the bullet had assumed to the line of flight at the time of impact. The wound of *exit* on the other hand is much larger. If the bullet has entered the limb anteriorly and escaped from the thick part of the calf posteriorly, the skin wound on the latter will be irregularly oblong or quadrilateral in shape, measuring as much as four or five inches in its longest diameter. There may be smaller multiple wounds about the edges of the surrounding skin as a result of escape of the secondary projectiles already mentioned. Muscles, tendons, and fasciæ are very much lacerated. The tissues generally for some distance from the surface of the wound are contused, and filled with hæmatomata. That such a wound is infected in all parts from the moment of its occurrence goes without saying. The bullet itself was not clean. Any fragment of it may

have carried infection into localities where it has traversed or lodged. Particles of bone contaminated by the infected bullet have done likewise. Shreds of clothing and particles of skin carried into the wound by the bullet have assisted in infecting the injured parts in all directions.

The picture which we have portrayed herewith is very common in close fighting, such as occurs daily in the present European War. There were only a few such cases from the battle of Santiago in 1898 — the first battle fought with the new armament by two armies of any size. There were proportionally many more in the Anglo-Boer, Russo-Japanese, and Turko-Balkan wars. In these wars explosive effects were not very common because the fighting took place more often at the usual battle ranges — beyond 500 yards. Still, whenever battles occurred at short range, the exaggerated lesions herein mentioned were invariably noted, and they were heavily infected.

Environment plays a great part in the treatment of these badly comminuted fractures in an active campaign. The wounded are at the front usually under fire, generally at points inaccessible to the relief corps. When the latter arrive they are provided with first-aid resources only. The practice is to stay hæmorrhage, which seldom requires much attention, to disinfect the skin with iodine, put on a first-aid dressing, immobilize the limb and wait until the patients are transported to a field hospital where the facilities are ample and the environments are dominated by the medical department. In battle the length of time the surgeon is to wait until his patients reach hospital care varies greatly. It is seldom less than twenty-four hours, and it is more often days. The delay is such that at the next examination the surgeon finds all the fractures of the type under discussion badly infected. He has a far more difficult problem to deal with than his civil confrère, amid surroundings that are to say the least, uncertain. Nevertheless he proceeds to treat his cases in accordance with modern methods. The compound comminuted fracture of the tibia is explored at the wound of exit, under ether if necessary; all metallic fragments and loose spiculæ of bone are removed; bony fragments adhering to periosteum and soft parts are replaced as near as possible to their normal position. When necessary a similar exploration is practiced at the wound of entrance. A drain is put in place for twenty-four to thirty-six hours, the wound dressed antiseptically, and the limb immobilized. The subsequent treat-

ment will depend on the behavior of the existing infection. These fractures do not heal as rapidly as the compound fractures of our civil confrères. Infection is deeper seated. Irrigation with antiseptic solutions, and incision to release pent up pus may become necessary. There may be a slow convalescence, with tardy healing and occasional discharge of pieces of necrosed bone.

In spite of the advances in wound treatment we have to admit that gunshot fractures of the long bones in war, notwithstanding the early application of first-aid dressings, are nearly all infected and that the ordinary rules of modern surgery to combat infection are often put to the severest test. Until the present European War, surgeons who were not familiar with field conditions were inclined to question the technique of military surgeons in the prevention and treatment of infection. This state of doubt might still persist if the difficulties had not been multiplied in the experience of both military and civil surgeons who are in great numbers at the front today.

We have surgeons of renown who will not admit that wounds by gunshot should be different from those due to other traumata when it comes to a question of combating existing infection. In his Hunterian Oration,¹ Sir W. Watson Cheyne speaks of the easy attainment of disinfection of accidental wounds in civil practice, a fact we all admit. In referring to the problem of disinfecting gunshot wounds he states that "some surgeons take a hopeless view" of the subject; and again, "Why then, should surgeons be so hopeless. I think the idea is probably founded on experiments carried out a good many years ago by LaGarde and others. In these experiments it is stated that in gunshot wounds in animals where the bullet is traveling at high velocity, particles of gunpowder may be driven into the tissues which form the sides of the wound to as great a depth as 17 millimeters, and presumably bacteria might also be driven in to the same extent, in which case no amount of syringing out of the wound with antiseptics could affect them. I cannot argue this matter fully here, but I may say that the experiments, so far as I read them, are not convincing, and I am not prepared to accept them without fresh and careful repetition."

We will not attempt to answer the adverse criticism of Sir W. Watson Cheyne except in so far as it may allude to our own experiments, the truth and value of which we will maintain.

¹ Cheyne, Sir W. Watson. Hunterian Oration before Royal College of Surgeons of England. *Lancet*, Lond., 1915, February 27.

Ordinarily the question of doubt might be set aside, but infection of gunshot wounds is so prominently before the profession today that the matter of the degree of infection in this class of wounds and the management thereof as compared to accidental wounds in civil practice should be settled now to the satisfaction of all.

The experiments referred to,¹ as far as they relate to our work, show the pathological anatomy of the tissues surrounding the track of a gunshot wound as determined by microscopic sections made at right angles to the line of flight of the bullet; the distance to which the tissues were altered; and the distance to which carbon particles (not gunpowder as stated by Cheyne) placed on the skin of animals might be driven in a wound through soft parts, independently of any bone lesion.

By firing the Krag-Jorgensen rifle bullet through the gluteal region of a cat, with varying velocities, we found the distance to which the tissues were infiltrated with hæmatomata, away from the channel made by the bullet, to be as follows:

With a velocity of 825 f.s., 8 mm.

With a velocity of 1138 f.s., 12 mm.

With a velocity of 2000 f.s., 23 mm.

The influence of sectional area in causing infiltration of hæmatomata in the tissues was ascertained by firing bullets of varying calibers, the velocity remaining approximately the same, into the gluteal region of a cat. The measured distances of the hæmatomata away from the channel made by the bullet were as follows:

Springfield rifle bullet cal. 0.45, vel. 1301 f.s., hæmatomata 30 mm.

Krag-Jorgensen rifle bullet cal. 0.30, vel. 1138 f.s., hæmatomata 12 mm.

The displacement of foreign matter, which may be found on the skin of animals, was ascertained by firing bullets of varying calibers and velocities into the gluteal region of cats after the skin and hair had been rubbed with powdered charcoal. The figures in millimeters represent the distance the charcoal particles were found away from the channel caused by the bullet.

Pistol ball, cal. 0.32, vel. 300 f.s., 3 mm.

Krag-Jorgensen bullet, cal. 0.30, vel. 2200 f.s., 10 mm.

To ascertain the distribution of carbon particles as influenced by the sectional area of bullets, the velocity remaining about the same, after firing into the same anatomical region of other animals, we found the results to be as follows:

Krag-Jorgensen bullet, cal. 0.30, vel. 1138 f.s., 6 mm.

Springfield rifle bullet, cal. 0.45, vel. 1301 f.s., 17 mm.

These are the experiments to which Cheyne takes exception and which he is "not prepared to accept without fresh and careful repetition." Those who have experimented on animals with high-power rifles, as well as surgeons who have dissected the area about the channel of gunshot wounds, will not require corroboration of the experiments to convince them of the truth of our statement. As we will show later the pathologic conditions as we have shown them to exist are verified by Sir A. E. Wright, who admits the impossibility of disinfecting gunshot wounds.

The world war now waging has taught us nothing on the subject of infection of gunshot wounds that we did not know before. We have known by past experience that the frequency and amount of infection in gunshot wounds was in keeping with the factors that augment the tendency to the development of infection. These factors are: hæmatomata, contusion, coagulation necrosis, and laceration generally. We are told that in the present war the wounds are heavily infected. Colonel Sir A. E. Wright,² while studying the cause and consequences of these infections, dwells on the fact that the clothes and skin of soldiers in war service become contaminated "with all manner of filth containing pathogenic organisms and spores; the projectile taking these with it and *implanting them far beyond the reach of any prophylactic applications of antiseptics.*" (The italics are ours.) What Colonel Wright states is very true, but the statement is equally true of gunshot wounds in other wars. We have always known that compound fractures from the present military rifle and machine-guns which show explosive effects when delivered at short range, become heavily infected. The fighting between the trenches on the western front of the line in Europe is all done within the zone of explosive effects. We have always known that the ragged wounds caused by pieces of shell, shrapnel, and grenades were prone to suppuration. The fact that these are the missiles that cause the majority of the wounds on the western front today explains the reason for the large number of suppurating wounds. If these same armies should go out into the open and fight battles with machine-guns and military rifles at 800 to 1,000 yards the wounds would not be badly infected any more frequently than they were in

¹ The lesions that augment the development of tetanus and other infections in gunshot wounds. *Tr. Am. Surg. Ass.*, 1903, xxi.

² Wright, Sir A. E. Wound infections; some new methods for their study. *Lancet*, Lond., 1915, April 10.

the Spanish-American, Anglo-Boer, or Russo-Japanese wars, the filthy condition of the clothing of the soldiers to the contrary notwithstanding. The majority of wounds would be simple flesh wounds with little or no laceration, exhibiting the nature of incised wounds, and they would heal very kindly for the most part, with the application of first-aid dressings. We are wont to call these humane wounds nowadays.

Virulent infections. Colonel Wright dwells upon the frequency of infections in this war by what is called intestinal microbes, viz., the gas phlegmon bacillus, or the bacillus *aërogenes capsulatus* of Welch, and the tetanus bacillus.

The frequent appearance of infection in gunshot wounds by the Welch bacillus is well known. Welch¹ himself recognized this, because he states in his Shattuck Lectures that the history of infection in wounds by this bacillus is most frequently seen in compound fractures, and next in gunshot wounds. The reason for this is apparent. The lesion is the same in the two kinds of wounds. In compound fractures from accidents hæmatomata, contusion, and laceration are ever present to augment the development of existing infection. In gunshot wounds, bone lesion is not always necessary to produce hæmatomata, laceration, and the characteristic features that favor the development of infection. Our experiments above cited have shown that hæmatomata and carbon particles are widely distributed away from the channel produced by bullets of varying calibers passing through soft parts in the gluteal region of cats. Doubtless the infected condition of the terrain in the western front adds to the frequency of infection by the Welch bacillus, but the presence of infection from this source is more especially frequent by virtue of the character of the lesions due to close fighting, and the frequency of wounds by shell fragments, shrapnel, and grenades.

What we have stated about the frequency of infection by the Welch bacillus is true of infection by the bacillus of Nicolaier. Lwowitch,² Strick,³ and Dorst⁴ show by their experiments how much hæmatomata augment the tendency to the development of tetanus. Compared to a clean incised wound they demonstrated that the susceptibility to infection in hæmatomata by the bacillus of Nicolaier was enhanced a thousand

times, and it was further shown by Strick that tetanus infection developed more readily in the lesion of a gunshot wound than it did in a hæmatoma purposely inflicted, and further, that the symptoms of tetanus in an animal shot with a bullet previously infected with the bacillus of tetanus developed twice as rapidly, and death ensued earlier, due no doubt to the state of the devitalized tissues in and around the channel of the gunshot wound.

We can infer from the widespread presence of the bacilli of Welch and Nicolaier, and their tendency to develop in devitalized tissues, that they may be present in wounds showing the characters of incised wounds without exhibiting the chain of symptoms that characterize gas gangrene and tetanus. This fact is well brought out by Dudgeon, Gardner, and Bawtree in an article on the "Bacterial Flora of Wounds Produced During the Present War," in the *Lancet* of June 12, 1915. They found that the bacillus of Nicolaier will live two months in a wound without manifestations of tetanus, and the bacillus of Welch has lived four weeks in certain wounds without causing gas gangrene. Furthermore, from a study of hundreds of gunshot wounds in the present war they cite again the fact that these two virulent infections are intimately associated with wounds having much devitalized tissue.

CONCLUSIONS

1. Infection in gunshot wounds is widely distributed by the energy of the projectile which is exerted in all directions, and it is especially so in hard bone lesions inflicted by projectiles traveling at high velocity.
2. Heavy infections depend more often upon the characteristic features of a gunshot wound, as hæmatoma, contusion, laceration, all of which have been shown by experiments to augment the development of the constant presence of infection in gunshot wounds.
3. To properly appreciate the difference between the degrees of infection in compound fractures due to accidents in civil practice and that due to projectiles from gunshot, one should bear in mind the superficial character of the one, and the widespread and deep-seated infection in the other, a condition not easily reached by the accepted treatment of wounds by antiseptics.
4. The task of the military surgeon in the treatment of compound fractures caused by gunshot, as compared to that of his civil confrère in the treatment of compound fractures by accident, is not so *hopeful*.

¹ Shattuck Lectures. Boston M. & S. J., 1900, cxliii, No. 4.

² Tavel. Description of unpublished work of Lwowitch, pupil of Köcher. *Rev. de Chir.*, 1899, xix, 701.

³ Strick. Die Tetanusinfection, von Schusswunden und Haemetomen ausgehend bei Kaninchen mit besonderer Berücksichtigung der Serum-Phosphylaxis und Therapie. Inaug. Dissertation, Berne, Cologne, 1899.

⁴ Dorst. Over den invloed vanshet hæmatoom op het cprreden van infectie in die chirurgie. *N. Tijdschr. v. Geneesk.*, 1896, xxxii, 503.

ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Lexer, E.: The Employment of Silver Foil in Surgery (Die Verwendung von Silberplättchen in der Chirurgie). *Zentralbl. f. Chir.*, 1915, xlii, 217.

Following the example of Halsted and Cushing, the author tried out the employment of silver foil platelets on wounds in which he desired a very inconspicuous scar. He first employed it in wounds or plastic operations of the face with such excellent results that it led him to employ it much more extensively elsewhere. He noticed that wounds covered with this foil remained perfectly dry even if left alone for a week to ten days, and that epidermization was much more rapid. He attributed this to the inhibitory effect of the silver upon bacterial growth. In osteoplastic flaps the scars are so faint that they can scarcely be seen.

Since observing the rapid epidermization in ordinary scars, he employed it in skin grafting with such good results that the grafts may be left untouched for a week to ten days. Occasionally blood and serum collect beneath some of the grafts, lifting them up, but if they are removed and the granulations covered with foil, epidermization is rapid. This last observation led him to apply the foil in granulating wounds. He observed that healthy granulations are rapidly covered over with epithelium from the edges of the wound without the formation of much granulation tissue. They become flatter. It appears as if the silver foil has an inhibitory effect upon the growth of the granulation tissue. In heavily secreting granulations the surface soon becomes clean, and epidermization goes on rapidly from the edges. The surface when healed is even with the surrounding skin and not raised in ordinary granulating wounds. If the gauze covering the foil is removed after a few days, little pieces of silver appear dissolved in the secretions. Credé investigated this and states that a combination of the silver and the lactic air takes place. It is the antiseptic action of this lactated silver that inhibits bacterial growth and permits rapid epidermization. Its employment is advised in osteoplastic operations of the face, in skin sutures beneath plaster of Paris casts, in skin grafting, and in the epidermization of granulating wounds.

L. A. JUHNKE.

ANÆSTHETICS

Williams, A. W.: A Portable Positive-Pressure Apparatus for Administration of Ether by Intratracheal Insufflation. *J. Am. M. Ass.*, 1915, lxiv, 138.

Induced by the revelations of the Meltzer-Auer method of etherization by intratracheal insufflation the author constructed an apparatus suited to the service conditions of the army. It was exhibited in 1912 at the Atlantic City meeting of the American Medical Association, and at the meeting of the Military Surgeons' Association at Baltimore. In field and hospital service in Texas and Mexico, it was essential to success in four operations. In two of these the method was by pharyngeal instead of intratracheal insufflation. For the purposes concerned, the discovery of the Meltzer method is seen to be epochal when compared with the former positive or negative pressure cabinets or rooms necessary for pulmonary or cardiac operations. The fear of pneumonia from tubes introduced in the trachea has not been realized, revealing the importance of the steady outflow of air between the catheter and trachea.

The claims made for Williams' apparatus are that it will always work. It is operated by storage battery and electric motor, and has a hand mechanism which may be quickly substituted as a motive power for the motor and battery—this mechanism being safe as against any breakdown of motor, and being indestructible—which cannot be said of foot-bellows made of leather, and other pumping devices. The other parts of the apparatus are substantially the same as in other apparatus, and the method of introducing the tracheal catheter and maintaining intrapulmonary pressure are not new.

F. W. PINNEO.

Blumfeld, Hewitt, F., Tate, and Others: Discussion on the Influence of Preliminary Narcotics on Induction, Maintenance, and After-Results of Anæsthetics. *Proc. Roy. Soc. Med.*, 1915, viii, Sect. Anæst., 15.

BLUMFELD referred to a similar discussion on the same topic about four years ago, at which time the opinions were so different that it seemed more time was necessary to arrive at conclusions than would be justified by experience. He thinks that now discus-

sion probably would bring out the fact that in some cases this method (narcotics preliminary to the anæsthetic) has great value, while in others it should not be used. Therefore, his first point was that as a routine measure these drugs should not be employed with the single exception of atropine. He has never seen or heard of any ill-effects from it so used. It is regrettable that usually the anæsthetist is prescribing for a patient whom he has not seen, and scopolamine and morphine seem risky drugs to prescribe indiscriminately. This argues for the anæsthetist seeing the patient beforehand. After the hypodermatic the patient should be undisturbed and should not walk to the operating room. Blumfeld claimed that these criticisms of scopolamine (particularly) and morphine do not apply to atropine, which may be freely used with but few contra-indications. The advantages of preliminary narcotics are: (1) a quiet induction; (2) less anæsthetic used; (3) diminished after-effects. Atropine contributes to the first and second. The patients he chooses for all three drugs are: highly nervous persons and the insane; protracted nose and throat cases; muscular individuals, or those addicted to the use of alcohol.

HEWITT expressed his high opinion of preliminary narcotics used with discriminating care. He also thinks the anæsthetist should be familiar with his patient's condition. Careful notes of 266 cases in which he had used morphine, atropine, and scopolamine in different combinations formed the basis of his conclusions. Atropine he considers a very valuable anæsthetic, having desirable effects upon secretions and causing little after-vomiting, and having few contra-indications, indeed none. Scopolamine he has become very shy of, having met with one case, an elderly man, of distinct idiosyncrasy, who was profoundly narcotized by 1/100 grain. He makes the injections three-quarters of an hour beforehand. Morphine he thinks strongly contra-indicated in certain cases: nose, throat, and tongue operations with hæmorrhage in which it is highly important that the reflexes should return quickly. The profession has not, he thinks, realized the importance of this; also of another point for the operator: the prejudicial effect of additional morphine afterward, paralyzing intestinal peristalsis. It must always be recognized that morphine hinders free pulmonary exchange; hence the intake of both ether and oxygen, thus explaining slow induction and prolonged maintenance.

TATE expressed himself as strongly in favor of preliminary hypodermatics, chiefly morphine and atropine; hyoscine is powerful but he believes uncertain, and inadvisable in the feeble. Its chief value is in subduing a susceptible nervous system both before and after operation.

MISS TURNBULL agreed with Blumfeld as to the value of atropine alone and as to using morphine and atropine in nasal cases.

MENNEL referred to what some surgeons call the rigid "scopolamine belly" due to this drug.

BOYLE spoke strongly of the advantage of the patient's seeing the anæsthetist a day or two before operation, so that he might have a better knowledge of the patient's condition. He had recently come from a war hospital where morphine, atropine, and scopolamine were used with success, adding to the comfort of both the soldiers and surgeons, the only drawback being the extreme thirst and dryness of the throat.

BARTON favored the use of narcotics, notwithstanding the hindrance to respiration, adding that ethyl chloride helps against this objection. He maintains only a light anæsthesia, the corneal reflex being present. Crile's theory of shock he does not accept, but believes in the principle of anoci-association.

SHIPWAY added a point in suggesting chloretone as a substitute for morphine in susceptible people.

Post-anæsthetic vomiting, it was by most agreed, is relieved by the use of preliminary hypodermatics.

F. W. PINNEO.

Cooke, A. B.: Anoci-Association in Theory and Practice. *J. Tenn. St. M. Ass.*, 1915, vii, 479.

Cooke is an ardent advocate of Crile's theories on shock and anoci-association. He shows that it is not enough that a patient ultimately recovers, but that operations should involve as little ordeal as possible for any organ. The theory of anoci-association, succinctly stated, is that shock is extreme exhaustion of brain-cells; other organs also sharing in these cytologic changes. General anæsthesia does not protect the central nervous system from assaults through the sensory tract, though producing unconsciousness and abolishing voluntary muscular action. The psychic factor also is important, and may alone produce shock, a common observation; hence the preliminary hypodermatics as well as the nerve-blocking. The data upon which Crile's theories are based, the period of some eighteen years including his twelve-hundred animal experiments, offer convincing evidence of the logic of the conclusions.

The cardinal principles of the method are four: (1) the preliminary morphine and scopolamine, (2) nitrous oxide and oxygen for general anæsthesia, (3) nerve-blocking by novocaine infiltrations, and (4) injections of trauautized tissues (except skin) with quinine and urea hydrochloride. Coupled with these is the principle of gentleness of manipulation of tissues.

F. W. PINNEO.

Deal, Don W.: Nitrous Oxide-Oxygen Anoci-Association in Practice. *Illinois M. J.*, 1915, xxvii, 355.

Deal records his personal observations during six months' travel as to the use of nitrous oxide combined with nerve-blocking, resulting in his adopting its use. To this end he made visits to Cleveland and also had a chosen anæsthetist go to the Lakeside Hospital for training in the method. He counts the success which they achieved as largely

due to the keen interest and skill of this anæsthetist and indeed adds, incidentally, in regard to nitrous oxide that he believes its safety is largely due to the skill of the anæsthetist and that he would in his own case prefer ether if the administrator were inexperienced. He pays tribute to the work of Crile as being a leader in the last decade in reducing mortality from shock in operations; recounts the theory of anoci-association as taught by Crile; mentions the injections of novocaine before the tissues are cut; the use of preliminary hypodermatics of morphine and scopolamine and of quinine and urea hydrochloride; mentions the value of nitrous oxide in preference to ether for inhalation as giving less shock and less fall of blood-pressure, and, further, its great value for short induction. In his opinion, the method is superior to spinal anæsthesia which, though providing nerve-blocking, does not prevent psychic trauma. By its use pneumonia is reduced 50 per cent, post-operative nephritis becomes rare, nausea is less likely, and nourishment may be given earlier. Where nitrous oxide does not afford sufficient muscular relaxation, the gas is not pushed to the point of cyanosis, but ether, three or four per cent, is added for a few minutes and then shut off, the amount of ether never being more than two or three drams.

In acute infection, nitrous oxide has an advantage over ether in that the phagocytes are not broken down. A case is sighted of an appendix removal, after which the patient walked about the hospital in six hours, walked on the street the next morning and at noon took a train for home, twenty-six hours after operation. He makes the following summary: (1) Nitrous oxide is more agreeable to the patient than ether. (2) It reduces shock. (3) It is safer, when administered by a skilled

anæsthetist. (4) Anoci-association aids post-operative comfort. (5) Novocaine injections prevent shock and reduce the amount of gas necessary. (6) Quinine and urea hydrochloride reduce after-pain. F. W. PINNEO.

Lumbard, J. E.: Ether-Oil Colonic Anæsthesia; a Report of Thirty-Six Head and Neck Operations. *Surg., Gynec. & Obst.*, 1915, xx, 553.

Lumbard reports 36 head and neck operations with special reference to 10 thyroidectomies. He has had over 90 cases, but recommends this method especially for head operations. He prefers compound liquorice powder to clear the bowel. The ether and oil are well mixed in a bottle. A hypodermic of morphine and atropine is given one-half hour before introducing the anæsthetic mixture, which usually is composed of ether 75 per cent and olive oil 25 per cent, about one ounce to every 20 lbs. of body weight. There is no preliminary bowel medication. The ether-oil should be introduced slowly. The patient should remain in bed while the anæsthetic is being given. Children are not as good subjects for this method as adults.

The technique requires more time than the usual methods. The method is of advantage in head and neck cases where the anæsthetist is in the way. Patients can be anæsthetized without their knowledge. There is much less mucous, hæmorrhage, nausea, vomiting, and tax upon the heart, lungs, and kidneys than with the usual inhalation methods. Respiration and pulse are more normal than with other methods. The apparatus is simple and cheap.

Lumbard considers it the best anæsthetic for thyroidectomies. After the above experience with eighteen different surgeons he strongly recommends it for head and neck operations.

SURGERY OF THE HEAD AND NECK

HEAD

Crouse, H.: New Technique for Operations on Steno's Duct. *Surg., Gynec. & Obst.*, 1915, xx, 593

Crouse deals with a new technique for operations on Steno's duct, and reviews in detail the techniques of DeGuise, Nicoladoni, Wyeth, Eisendrath, and Weber, and mentions the suggestion of König, comparing these techniques with that of his own, in 5 cases of various forms of pathology of Steno's duct successfully operated upon.

His technique is as follows: An incision is made over the cheek 2 cm. below the zygomatic process, 2 cm. in front of the ear, in order that the arteries, nerves, and veins will not pass over, through, or underneath the parotid. The incision should be about 3 cm. in length, simply cutting through the skin and adipose tissue of the cheek; the fascia of the parotid is incised and exposed for about 1 cm. parallel to the skin incision; the lip is grasped and

the cheek turned out; a pointed strip of buccal mucous membrane one-fourth inch wide and one-eighth inch deep is marked off commencing slightly within the vermilion borderline of the upper lip stripping the same back, slightly posterior to or even with the cusp of the second upper molar tooth, leaving the posterior end of the strip thicker than the anterior end and unseparated. The mucous strip is clipped with curved scissors, care being taken to cut deep enough so that its vitality is not impaired. This strip is tagged with an artery forceps. Next, a Doyen or similar forceps is passed through the external cheek wound over the surface of the masseter to its anterior border; the buccinator is punctured and the mouth is entered just in front of the posterior area denuded by the buccal mucous membrane strip; the forceps are widely stretched; the mucous strip caught, drawn into the cheek wound and sutured with No. 0 ten-day chromic gut, similar to Lembert's intestinal suture, making a double-tie

leaving the ends long in order to secure the loop of No. 5 ten-day chromic gut, the ends of the latter remaining in the mouth; the skin wound is sutured subcuticularly, the mucous membrane strip being whipped together with small chromic gut.

Soderlund, G.: Primary Actinomycosis of the Salivary Glands (Über die primäre Aktinomykose der Speichel drüsen). *Nord. med. Ark.*, Stockholm, 1914, xlvii, No. 4.

From his abundant material the author has derived considerable experience and gives a detailed exposition of primary actinomycosis of the salivary glands. Until the present time this disease has been considered a rarity. He has proved that a primary actinomycosis infection of all salivary glands can take place and that the disease in the early stage has a definite clinical as well as pathologic picture. In a relatively short time the author has observed 9 primary cases, 4 during the last two and one-half years, in a total of 12 cases. Eight of these were very early cases of primary actinomycosis of the salivary glands. The disease in all cases was still limited to the gland itself. Altogether the author reports 31 cases, 7 of which originated from the submaxillary gland. In 9 cases the submaxillary region was involved, but the exit from the gland could not be proved. Two cases positively originated from the sublingual gland, one probably originated from the sublingual gland, and five positively originated in the parotid. Seven other cases involved the parotid region and may have been primary in some instances and secondary in others.

The author further discusses the diagnosis and pathology of primary actinomycosis of the salivary glands, its further development, and the breaking through the gland into the surrounding tissue. From his investigations he was able to determine that in the primary cases the infection entered positively by the duct route in some of the cases and probably in the others also, the patient chewing a stem of grain bearing the actinomycotic organism.

If the infection has once taken place the process may be classified into three different stages: (1) the formation of a diffuse inflammatory process, in conjunction with a chronic enlargement of the gland originating from a piece of infected grain stem lying at the end of the duct in the bilus or near there; (2) the formation of a localized abscess, usually in the immediate vicinity of the piece of grain stem; (3) the spreading of abscess formation within the gland, eventually forming new abscesses and finally breaking through with the formation of fistulae, either external or internal.

The author discussed this question in 1908 and then believed that the salivary ducts were in reality the portals by which an actinomycotic infection enters, even in the cases of face and neck actinomycosis.

L. A. JUHNKE.

Ringel: Puncture of the Corpus Callosum According to Bramann (Über den Anton von Bramann'schen Balkenstich). *Beitr. z. klin. Chir.*, 1914, xcii, Festschr. Hamburg-Eppendorf, 41.

The author reports five cases of puncture of the corpus callosum in four cases of hydrocephalus and in one for tumor. The latter was not accompanied by hydrocephalus internus, hence the operation was not successful. A definite result, however, was obtained in the four cases of hydrocephalus in children — in one it was excellent.

In figuring up the statistics the author finds a mortality of only 1.5 per cent for the operation, whereas more complicated procedures have a mortality much greater; i.e., ventricle drainage according to Payr's method, 38.8 per cent. Since the puncture is so simple a procedure it ought to be undertaken in all cases of hydrocephalus and brain tumors complicated by an internal hydrocephalus. In many cases improvement, and even cure, will result, thus avoiding the necessity of more radical measures.

L. A. JUHNKE.

Baker, D.: The Treatment of Brain Tumors. *Albany M. Ann.*, 1915, xxxvi, 230.

Baker considers the operative mortality, the various kinds of tumors affecting the brain with special notes on the treatment of each, groups them according to their site, and gives the mode of treatment for the different locations.

He says the treatment of a person afflicted with a tumor of the brain presents one of the most difficult problems a medical man can meet. The mortality seems prohibitive, with Tooth's post-operative mortality of 32 per cent, von Eiselsberg's 38 per cent, and Küttner's 45 per cent. Cushing has reduced the post-operative mortality to 8.4 per cent; thus the future promises a great improvement in results through increasing experience. Our knowledge of tumors of other tissues does not hold good in case of brain tumors, as the brain differs so radically from other tissues in regard to function, structure, accessibility, and response to surgical trauma. He says the most frequent form of intracranial neoplasm is the endothelioma and is usually easily removed as it arises from the meninges. The prognosis after successful removal is better than in other tumors, because they do not tend to recur unless the bone has been involved. Gliomata, if encapsulated or degenerated, are removable, otherwise he says decompression alone will probably relieve the symptoms, prolong life, and give comfort as long as a more radical procedure. Cases of fibrous tumors, when successfully removed, being benign, are sure of recovery. They are the common tumors of the cerebellopontine recess, arising from the sheaths of the cranial nerves, and the disastrous result is the effect on the respiratory center causing respiratory failure. Sarcoma is certain to recur if the brain tissue is invaded; consequently the prognosis depends on the stage at which the tumor is

attacked. In metastatic carcinoma and sarcoma treatment is useless. Cysts may be removed or the wall partially removed and drainage established. Tuberculomata are usually multiple, found most frequently in the cerebellar region of children, and although often removable their disturbance is usually followed by a fatal tubercular meningitis. Syphilomata are usually superficial and easily removed.

The operative treatment of brain tumor consists either in complete or partial removal of the tumor, or decompression. To have a successful operative result, the following requirements are necessary: the surgeon must be thoroughly trained in cerebral surgery and be a master of all the various methods peculiar to this branch of surgery; he must be slow, deliberate, and gentle and must be assisted by a staff accustomed to his methods; he must have an especially trained anæsthetist; and the hospital must be equipped to meet every emergency.

Intracranial tumors group themselves according to their site and the requirements of treatment. Supratentorial tumors should be approached by means of a large osteoplastic flap over the location of the tumor and the dural flap smaller than the bone-flap. Careful suture of the dura together with reposition of the whole osteoplastic flap overcomes the possibility of cerebral hernia. A tumor of the dura is removed by excision of the portion of the dura from which it springs. A cortical growth definitely encapsulated can be enucleated. Hæmorrhage is controlled by bits of moist cotton, pieces of muscle, or fascia applied to the bleeding point. Subcortical growths can sometimes be reached and enucleated by cortical incision or by the process of extrusion. The operation is not complete unless the intracranial pressure has been lowered, and subtemporal decompression is best to produce this where the tumor is not removed. If this cannot be accomplished from the operative field exposed, it should be made independently as a separate operation, the technique of which Baker describes. A single decompression may not lower the intracranial pressure sufficiently to allow the osteoplastic flap to be replaced, in which case a second decompression should be performed on the other side, or spinal puncture done. Subtentorial tumors are those of the cerebellum and cerebellopontine recess. Such tumors should be exposed through an incision from mastoid to mastoid just above the superior curved line of the occipital bone and a median incision downward from the center of this transverse incision; flaps reflected outward and the posterior margin of the foramen magnum exposed; the thin bone of the cerebellar fossa completely removed; the occipital sinus separated from the bone extending between the external occipital protuberance and the foramen magnum and this bone removed with a Gigli saw; the sinus is ligated and severed allowing either lobe of the cerebellum to be displaced toward the opposite side. This is also the best form of decompression in this region as the neck muscles

afford sufficient support. The muscles should be sutured in layers. Primary union is essential. The mortality is high. For hypophyseal tumors he describes the transphenoidal route. Hypophysis and sphenoid sinus should be studied radiographically before operation. If transphenoidal operation is not enough decompression, especially when the tumor extends into the cranial cavity, he advocates subtemporal decompression also. Inaccessible tumors and those giving increased intracranial pressure are treated by simple decompression.

He says the important factor in successful treatment of brain tumors is early diagnosis and early operation, and the positive indications for operation are increasing swelling of the optic disc, optic neuritis with diminution of visual acuity, unbearable headache, increasing frequency or severity of convulsions, extending paralysis, or pronounced mental changes.

The author summarizes the present status of the treatment of brain tumors as follows: "Cerebral surgery is emerging from the same period of discouraging uncertainty which forms a chapter in the history of abdominal, pelvic, and genito-urinary surgery that is not pleasant to recall in the light of our present knowledge. The chapter deals with the poor results and high mortality dependent on working in ignorance of the fundamental principles. Many mistakes in the past in cerebral surgery are now recognized and can be avoided in the future, many erroneous ideas have been dispelled, and many limitations of this branch of surgery are recognized and can be respected. The improved results which are sure to come in the future will be in a great measure due to early diagnosis and early operation, and to strictly limiting the operation to a properly performed decompression in that class of cases which are now recognized on exposure as irremovable tumors."

CARL R. STEINKE.

Trotter, W.: The Principles of the Operative Treatment of Traumatic Cerebral Lesions.
Brit. J. Surg., 1915, ii, 520.

The author makes a strong plea for a greater correlation between clinical facts and experimental and pathological data in cerebral lesions. As a rule there is a tendency to allow the former to overshadow the latter.

The article itself is divided into four sections, with many subdivisions, all of which tend to bring out the above correlation.

Under the heading "Physiological Peculiarities of the Cerebral Circulation," a short anatomical description of the brain is given, with special stress on the absolute inelasticity of the craniodural capsule and the close application of this capsule to the brain. These facts are used in the sections on encroachments on the intracranial cavity.

1. Of encroachments of vital origin, hæmorrhage is the chief. The effects noted are due solely to an interference with the circulation in that part of

the brain affected: (1) Stage of compensation: With a developing hæmatoma, space is afforded for the blood, without impairing cerebral circulation, (a) by a displacement of the cerebrospinal fluid, and (b) by compression of the regional veins, which allow of a certain amount of compression before congestion. (2) Stage of venous obstruction: As hæmorrhage increases, the compression on the veins also increases until they are finally obliterated, causing a congestion and cyanosis of the brain in that region. In many cases of traumatic compression, the process goes no further, and gives rise merely to an increased excitability of cerebral tissue. (3) Stage of anæmia: Further increase in the hæmatoma leads to a collapse of the capillaries, and a white area is formed immediately beneath the clot, from which the blood is totally squeezed out. This gives rise to paralytic symptoms, which condition is invariable and characteristic. If the hæmorrhage continues, these areas gradually enlarge until more and more brain substance is involved, with corresponding symptoms: the three zones of compression, however, maintaining their entities.

Encroachments due to external violence fall under the heads of (1) deformation of the skull through external violence, as a fall on the head, and (2) traversing of the skull by high velocity bullet. The physical consequences of both are identical: at the moment of injury there is a very great increase of intracranial tension, and the entire brain is subjected to hyperacute compression. This gives rise to total, but momentary, capillary anæmia of the brain, with resultant widespread paralytic symptoms, and is known as concussion of the brain. It is characterized by (a) instantaneous onset; (b) paralytic symptoms referable to all parts of the brain; (c) tendency to spontaneous recovery; and (d) absence at post-mortem of any characteristic findings.

1. In injuries accompanying deformation of the skull, as a rule there is an inbending of the skull but no depressed fracture. Part of the force being transmitted throughout the cavity causes concussion, and part directly affects the brain substance. The brain is injured (1) at the point of impact of skull and brain, direct contusion; (2) diametrically opposite—contrecoup or polar contusion; and (3) between these two points, in scattered foci—substance contusion. Also the sudden displacement of cerebrospinal fluid in the ventricles may cause foci of contusion through the narrower parts, the Sylvian aqueduct.

2. Injuries due to transit of a bullet depend on the velocity of the bullet. At maximum velocity, the cranial contents acting as continuous homogeneous medium, the skull is shattered, the scalp torn open, and the brain disorganized. At slightly less velocity, the scalp remains whole, but the brain and skull are destroyed. As velocity declines, this explosive effect is the first to disappear, except at the exit wound. At low velocities there is intense hyperacute compression of the brain, an

explosive effect at the exit wound; but as long as the cranial vault remains intact, extensive destruction of the brain does not occur.

3. Injuries associated with localized fracture are essentially local. The scalp is lacerated, the skull comminuted and depressed, and the brain contused or lacerated locally, with no scattered or distant foci of indirect injury, no polar contusion, and slight concussion. There are three practical rules in these cases: (1) In adults, invariably all depressed fractures are compound. (2) The damage to the brain is often underestimated. (3) The prognosis is better than the wound would indicate, because there is no polar contusion or distant lesions.

There are three modes of action of cerebral injuries as follows:

1. *Direct destructive effects.* Most commonly by bullets, and easily recognized.

2. *Reactionary swelling.* Injury of the brain leads to œdema and swelling, which in turn leads to pressure on the veins and venous obstruction; but there is no capillary anæmia, and the symptoms are chiefly confined to the irritative phenomena. It is when this condition progresses below the tentorium into the vital centers that the gravest effects are produced. In concussion of the brain the irritative symptoms coming on several hours after injury are due to this reactionary œdema causing venous obstruction, and a purely decompressive operation is indicated.

3. *Hæmorrhage.* This is the most important mechanism by which symptoms are produced after head injuries. The situation has an important effect on the size of the hæmatoma, and the rate of bleeding is even more important, considering the symptoms and the gravity of the case.

(a) *Extradural.* Found chiefly in the middle fossa and usually from the middle meningeal artery; may come from the veins and may be located in the frontal region.

(b) *Subdural.* Commonest cause of severe compression. In the acute, the hæmorrhage readily and rapidly extends over the whole hemisphere, which is displaced toward the opposite side. It may spread to the posterior fossæ and bulbar symptoms occur. The pressure often forces the brain into the tentorial foramen, preventing the spread into the inferior fossa and subsequent bulbar involvement.

(c) *Cortical.* Arises from the vessels of the cortex and is the most common cause of Jacksonian epilepsy. It is the result of cerebral contusion.

(d) *Intracerebral.* Is very uncommon and very grave. Is due to severe cerebral contusion from one of the distant foci of injury in the brain substance, is accompanied by other contusions, and usually without fracture of the skull.

(e) *Intraventricular.* Is usually an extension of the intracerebral into the ventricle and is very uncommon.

Clinical types of cerebral injury are as follows:

1. *Grave and extensive hemispherical compression.* After severe injury concussion develops, which passes off, followed by a lucid interval, and then a comatose state, with hemispheric signs. Progressing pupillary changes occur and, later, irritative bulbar symptoms. Operation is indicated, the opening to be made in the temporal fossa and to be small. If the brain bulges strongly, a decompression is necessary. The dura should always be incised to discover a concealed hæmatoma and it should not be sutured afterward. Drainage usually is not necessary.

2. *Grave injury without localizing signs.* After severe injury with fracture of the base and external hæmorrhages, concussion occurs, and shades into more or less complete coma without a distinct interval. Usually this coma is not profound. There is some rigidity of the limbs; reflexes are exalted or depressed; there is no definite pupillary change and no incomplete bulbar signs. Such a case, if of severe grade, is usually fatal, but milder conditions often recover spontaneously. They are prone to pneumonia and meningitis, however. No direct treatment is indicated, because there is no definite focal lesion. If coma becomes profound and persistent for days or weeks, that in itself localizes the pressure in the superior chamber and indicates a temporal decompression operation. The results are usually satisfactory.

3. *Cases with mainly irritative signs.*

(a) *Severe head injuries with mental excitement.* From a state of concussion the case passes into a violent, uncontrollable delirium, as if fighting drunk. A diagnosis is often impossible immediately, and usually only after observation. Generally this delirium is more impenetrable to external influences and signs of severe headache are present. As a rule, it is necessary to delay operation until some definite paralytic phenomenon appears.

(b) *Classical "cerebral irritation."* After concussion has passed, a typical state of cerebral irritation supervenes. The case is very irritable, pulse usually quick, temperature raised, and always a severe headache. There is no mental confusion, but no spontaneous effort, mental or physical. Occasionally, however, there is delirium, especially at night.

This is a condition of moderate venous congestion with œdema, caused by multiple foci of contusion through brain substance. Spontaneous recovery is usual, but is generally followed by headache, giddiness, loss of memory, and even epilepsy. If severe, temporal decompression is indicated.

4. *Cases with signs of localized lesion.* These are mainly cases of cortical hæmorrhage after direct or polar contusion. Symptoms of localized cerebral irritation usually show after several days or a week, and are most common in the motor area. Operation should be performed as soon as localization of the hæmatoma can be made.

5. *Compound depressed fracture.* There is a remarkable absence of symptoms of concussion or distant injury, and the prognosis is surprisingly good. The diagnosis is usually easy, but a skiagram should always be taken. Unless the injury has directly affected some part, there will, as a rule, be no primary cerebral symptoms. All cases demand operation, whether they display cerebral symptoms or not. The chief object is to limit sepsis, remove foreign matter, and provide drainage, but extensive explorations into brain substance must not be done.

PHILLIPS M. CHASE.

NECK

Lilienthal, H.: *A Case of Mediastinal Thyroid Removed by Transsternal Mediastinotomy.* *Surg., Gynec. & Obst.*, 1915, xx, 589.

Lilienthal reports a case in which the anterior mediastinum was freely exposed by sagittal section of the sternum so that the enucleation of a large retrosternal thyroid became possible. The drainage of this region, a difficult problem, was finally managed with the aid of an automatic suction apparatus. Auricular fibrillation was an alarming and distressing phenomenon induced, perhaps, by the pressure of a gauze packing upon the auricle. Recovery was complicated by an operation for the relief of cystic duct obstruction by gall-stone.

Generalizing from this one case, it may be concluded that the operation of exposing the anterior mediastinum by splitting the sternum is a simple surgical procedure.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Howard, R.: *Cancer of the Breast.* *Practitioner*, Lond., 1915, xciv, 742.

The author gives a summary of his experience in 100 cases of carcinoma of the breast which he operated on in the London Hospital.

All the cases of cancer were confirmed by microscopical examination. During the time he was collecting the 100 cases of cancer, he operated on only 36 cases of other varieties of tumor including

cases of chronic interstitial mastitis. Cancer is therefore the most common of all breast tumors.

The average age was 47. His conclusion is that breast tumors occurring in women over 35 are much more likely to be cancerous than not. There was no definite connection observed between cancer and marriage. Those with the shortest histories were unmarried. There is no relationship between abscess of the breast and cancer. In none of his cases was there a definite history of injury preceding the tumor. He thinks it is well nigh impos-

sible to make a differential diagnosis between chronic interstitial mastitis and carcinoma. However, the theory may be accepted that a carcinoma not infrequently arises in a patch of chronic interstitial mastitis.

In 67 out of 100 cases the lump was discovered by accident. Absence of pain is a marked feature in the history of cancer of the breast and the primary cause of a late diagnosis. On the other hand, chronic interstitial mastitis causes pain usually quite markedly.

In general it may be stated that the more the patient complains of pain from a lump in the breast, the less dangerous the condition. In only four cases did the patients come for advice because of discharge from the nipple.

If the ordinary clinical textbook features are present, namely, a hard solitary tumor in the breast, adherent to the skin, fixed somewhat to the pectoral muscle, causing retraction of the nipple, and associated with a hard enlarged mass of glands in the axilla, the prognosis from operative intervention is not good. The diagnosis must be made at a much earlier stage of the disease if the mortality is to be lessened.

In women over 30 a lump in the breast is usually cancer, especially if it alters the contour of the breast, and if there is any elevation of the nipple. The diagnosis is practically certain. Two or more lumps in the same breast point to a mastitis, rather than cancer, especially if they are ill defined. The author reports 2 cases out of his 100 in which there was carcinomata in each breast when first seen. In early cases clinical differentiation between cancer and interstitial mastitis is not always possible. When there is a question, the author advises treating for chronic inflammation for not longer than three weeks. If the lump does not disappear or begins to grow smaller by this time, operation is advised, and consent obtained to remove the whole breast if necessary. In case of doubt he cuts a wedge-shaped piece out of the breast and has it examined microscopically. If cancer is found, the complete operation is performed. He removes an area of skin the center of which is the tumor, and includes in this the nipple. He takes the subcutaneous tissue from the middle of the sternum to the latissimus dorsi and from the clavicle to well onto the abdomen; the breast; the pectoralis major and minor and their fasciæ (the clavicular head of the pectoralis major is frequently saved, the pectoralis minor is always removed); the whole of the fat and fascia in the axilla; the fascia over the serratus magnus and the subscapularis. The operation commences in the axilla and works toward the midline. The entire technique takes from three-quarters to one and one-quarter hours, depending upon the fatness of the patient.

The author's mortality was 3 per cent: one case died of fatty degeneration of the heart, one of goiter, and one from embolism. His patients complained of little inconvenience following the operation

and were able to resume their household duties. He is unable to give any definite percentage of cures. He is impressed with the great difficulty in giving a prognosis in any particular case. Of his 100 cases he has so far performed 11 operations for recurrences. His experience in treating inoperable cases with radium and with the X-ray has been disappointing.

HARRY G. SLOAN.

Beck, C.: Extension of the Limits of Operability of Recurrent Carcinoma of the Breast. *J. Am. M. Ass.*, 1915, lxiv, 1749.

Experience shows that recurrence of carcinoma of the breast after a skillful radical excision is mostly seen in the axillary region and in the neck, whereupon the vessels, particularly the veins and the nerves of the arm, become blocked and compressed. The neuralgic pains of the arm and the edema of the same are, for the most part, the evidences of such a recurrence. When this stage is reached, most surgeons consider the case inoperable with the view of radical cure, and justly so, because it is very questionable that an elimination of the process now spread into a region of great vessels and proximity to the large nerve-trunks is possible. The only thing to do in such cases is to make the patients comfortable with röntgen rays or Coley's serum and the most reliable morphine. Such cases are always a source of dread to the surgeon.

In the course of the last few years the author has been able to snatch a few cases from such certain death, and since years have elapsed from the time of treatment and no recurrence has taken place, he feels that there is a possibility of doing some good in some of these cases by a more extensive operation. It consists in the exarticulation of the whole shoulder-girdle, including the clavicle, arm, and scapula, with the plexus and the vessels of the affected side, with the ribs, if necessary, should they seem invaded by the carcinoma.

The operation begins with the formation of a large skin-flap destined to cover the whole area of the defect, the exarticulation of the clavicle following, then dissection of the tissues of the neck and axilla in one block, ligation of every vessel as it is reached, cautious cutting of one nerve after the other, and, lastly, the separation and excision of the scapula. Altogether the author has done this operation eight times in nine years. All cases were desperate, some of the patients operated on several times by him or others were considered inoperable, some of them having consulted the best operators of the country, who declared surgical operations useless.

Eight cases are reported, with the following results: Case 1 died in six months from intracranial carcinomatosis. Case 2 lived three years and disappeared from observation. Case 3 developed erysipelas and died. Case 4 died shortly after operation from pleural complication. Case 5 had several operations previous to the exarticulation. She has been free for five years. Case 6 recovered and is

still alive (three years). Case 7 died on the operating table following section of the large nerves. Case 8 is still alive, but has a rib involved.

Summing up these results, the author believes that, while they are not ideal, considering the desperate condition of the cases, they are very good, and the procedure seems commendable.

EDWARD L. CORNELL.

Wilensky, A. O.: Empyema of the Thorax. *Surg., Gynec. & Obst.*, 1915, xx, 501.

A critical study is made of 299 cases of acute empyema which were treated in Mount Sinai Hospital, New York, in the last ten years. The subject is studied in a very detailed manner and under the following headings: age, sex, etiology, pathology, bacteriology including blood cultures, complications, methods of treatment, and final results.

The pathology and bacteriology of the process is studied *in extenso*, and the facts are correlated as far as possible with the clinical laboratory findings, especially with regard to the examination of the chest fluid. It is pointed out that although tuberculosis of the pleura is fairly common, tuberculous empyema is comparatively rare.

The complications met with are very numerous and are widely scattered throughout the body, the pulmonary system being especially susceptible. Complications are also very common in the structures within the cerebrospinal axis. The average stay in the hospital was 44 days.

The conclusions drawn are as follows:

1. In the great majority of cases empyema is secondary to some other inflammatory lesion in the body.

2. The mortality for the series was 28 per cent, varying from 50 per cent in children to 18 per cent in adults.

3. The most favorable period for recovery is between three and ten years of age.

4. Twenty per cent of the patients die as a result of the primary illness, or of a recurrence of it, as pneumonia, or of some other complication or intercurrent disease. Only eight per cent die because of the process in the chest.

5. Twenty-three per cent of the patients who recovered had more or less trouble with the healing of the sinuses.

6. Advances that will be made in the treatment of empyema will come from improvements in the operative technique or in the after-treatment, which will tend to decrease the frequency of chronic empyema sinus to a minimum, or perhaps to eliminate it altogether.

TRACHEA AND LUNGS

Davies, H. M.: Bronchiectasis Treated by Ligation of Branch of Pulmonary Artery. *Proc. Roy. Soc. Med.*, 1915, viii, Clin. Sect., 32.

The author reports a case of bronchiectasis in a 17-year-old boy. He resected portions of the fourth

and fifth ribs four days after doing a nitrogen displacement. The vagus was injected just above the hilum with novocaine, and the branch of the pulmonary artery to the lower lobe was ligated. Ether was given by means of a positive pressure apparatus.

The incision was opened several days later for drainage, following which recovery was uneventful. Three months later the patient was able to work, and had only a slight cough occasionally.

Davies believes that nitrogen displacement is of value only in bronchiectasis so long as a permanent collapse is maintained. He believes it is of great value in abolishing bronchial secretion and in lessening toxæmia.

J. R. BUCHBINDER.

PHARYNX AND ŒSOPHAGUS

Hirschmann, C., and Frohse, F.: Topographical Anatomy of the Œsophagus (Zur topographischen Anatomie des Oesophagus). *Beitr. z. klin. Chir.*, 1915, xcv, 469.

Zaaijer in Leyden recently resected a carcinoma of the cardia successfully, and Torek in New York one of the thoracic part of the Œsophagus. Both operated intrathoracically and through the pleura and made an external opening for the oral stump of the Œsophagus. An absolutely indispensable condition to successful surgery of the Œsophagus is accurate knowledge of its topographical anatomy. Five plates are given, accompanied by a detailed description in the text of the exact relation of the Œsophagus in all its parts to the surrounding structures, and of the position of all nerves, blood-vessels, and glands of the Œsophageal region. These details should be read in the original in connection with the plates.

A. Goss.

Coates, G. M., and Goepf, R. M.: A Case of Perforation of the Œsophagus by Septic Infection. *Penn. M. J.*, 1915, xviii, 640.

The patient, aged 24, had eaten creamed chicken; in the midst of the meal she felt a violent, stabbing pain in the right side of the throat and was unable to swallow thereafter because of the continuance of the pain. She was taken home and a competent laryngologist called, who inspected the pharynx, fauces, and larynx, could see no foreign body and told her that she probably had swallowed a sharp piece of chicken bone which had caught temporarily and then passed down, leaving the scratch which caused the dysphagia. When, however, 48 hours passed, with the pain and the inability to swallow continuing, he sent her to the hospital for an Œsophageal examination.

A Jackson bronchoscope, without the obturator, passed the obstruction and thence went easily almost to the cardia. No foreign body was discovered, the lower part of the Œsophagus, below the level of the cricoid cartilage, being normal. On withdrawing the scope the walls were inspected with great care and the inflamed and indurated portion was found to be about 5 centimeters in width. Moreover,

at the lower edge of this portion, on the right side, were two hæmorrhagic spots, with a small amount of blood exuding. The scope was withdrawn and repassed with ease and although there was some slight bleeding from the inflamed area nothing further was discovered and the patient was returned to bed after being on the table about 50 minutes. The next day she could swallow slightly, the swelling and pain in the neck continued, the urine contained albumin and casts, the tongue continued coated, the temperature ranged from 100° to 102° and she said that a small amount of blood-streaked pus had been expectorated which, she felt, had come from the sore spot in the throat. Twenty-four hours after the œsophagoscopy, she was again unable to swallow except with the greatest difficulty. Two days later swallowing was again easier, the neck was slightly less tender, but still much swollen, showing no fluctuation; the tongue was dirty and the breath foul. A small amount of pus was again expectorated and the temperature remained the same. She complained of pain in the right abdomen and right lower chest.

From this time on the history of the case may be briefly summarized: there was an onset of fever and constitutional disturbance, with generalized arthritis and right-sided pleurisy, five days after the accident. The temperature, at first 103° , continued with remissions of the septic symptoms for nine days and then remained normal or subnormal until the patient's discharge two weeks later. The arthritis subsided for a time after its first appearance, but on the eleventh day returned with increased severity for about three days, during which time the patient was rendered entirely helpless by the pain, which was accompanied by intense itching of the hands and feet. Pleurisy, with severe pain, but without effusion, was present from the fifth to the tenth day. Albuminuria was found on the seventh day and continued for nine days. Urticaria was present practically from the beginning and continued throughout the attack, the eruption lasting a few hours or an entire day at a time.

During the three days of the arthritis a daily hypodermoclysis of 600 cubic centimeters was given. The urine was reduced in quantity and heavily loaded with albumin, hyaline casts, and leucocytes, but cleared up as the arthritis subsided. The urinary quantity increased markedly under the influence of hypodermoclysis, the specific gravity falling from 1.027 to 1.007, and this condition persisted until the patient's discharge.

The dysphagia gradually subsided; the tissues of the neck regained their normal outline; the tenderness disappeared first from the left side of the thyroid, then from the right and, lastly, from the deeper structures. Twelve days after the accident all local symptoms had disappeared. The patient was discharged, cured, after an illness of one month.

The interesting features of the case from the medical standpoint are the number of different septic manifestations—urticaria, pleurisy, nephritis,

polyarthritis, and severe secondary anæmia—the rapidity of their onset and their equally rapid subsidence. The prostration during the height of the attacks, that is, during the period of severe arthritis, which was the prominent clinical feature of the case, was in proportion to the severity of the nephritis and the anæmia, and for a time the prognosis was regarded as extremely doubtful. The recurring attacks of intense and generalized urticaria suggest an effort at elimination of the toxins, and were regarded as not altogether unfavorable symptoms.

EDWARD L. CORNELL.

Torek, F.: Operative Treatment of Carcinoma of the Œsophagus. *Ann. Surg.*, Phila., 1915, lxi, 385.

Torek describes his method of operating upon the three parts of the œsophagus, going into detail especially in dealing with the intrathoracic portion.

He states that with the exception of some successes in the cervical portion, treatment of cancer of the œsophagus has until recently been a failure and still is unsatisfactory.

Though definite proof of the possibility of removal of the carcinomatous œsophagus has been furnished in the last two years, the cases brought to the surgeon are past operation when they seek relief for difficulty in swallowing solid food, as that is a late symptom. Pain on deglutition or independently of swallowing is a late symptom. In early and moderately advanced cases there is, as a rule, no pain. Pain indicates extension beyond operative limits. The fact that there is no pain before the passage becomes obstructed probably explains why the early case is unknown to the surgeon. The patient does not pay attention to the temporary disturbance due to the swelling in the vicinity of the early cancer, and when swelling subsides and he can again swallow he will not consent to a dangerous operation.

Besides subjective symptoms which Torek does not give, the diagnosis is made from information derived from passage of sounds, from röntgenograms, and from œsophagoscopy. He advises against removal of a section for diagnosis.

Operation on the cervical portion has been reported successful in a number of cases, as far as the operation was concerned, though all cases died from a recurrence, except a case reported by von Hacker, which was well one and one-half years after operation. The abdominal portion has been resected successfully three times: Völcker 1907, Kümmel 1909, Zaaier 1913. The first two cases were cancer of the cardia of the stomach with resection of the abdominal œsophagus. After discussing the relative merits of the operations of the above men the author gives credit to Zaaier for the first successful removal of carcinoma of the abdominal portion of the œsophagus.

Carcinoma of the thoracic portion has been operated on successfully but once, the author's case, which is well and free from symptoms twenty and one-half months after operation. He mentions

that a few cases have lived about two weeks before they succumbed to the results of the operation.

He reviews the anatomical points, calling attention to the position and relation of the three portions of the œsophagus. The points he brings out are the relations to the heart, aorta, recurrent laryngeal and vagus nerves, the thoracic duct, and intercostal arteries, and the vena azygos.

The blood supply is from the inferior thyroid arteries in the neck, branches of the bronchial arteries and aorta in the chest, and the left gastric in the abdomen. The three points of narrowing are: at the beginning of the œsophagus, at the bifurcation of the trachea, and at the hiatus œsophagus of the diaphragm. The average measurements according to von Hacker are: males, incisors to beginning of œsophagus, 15 cm.; to bifurcation of trachea 25 cm.; to cardia 40 to 41 cm. For females, the figures are respectively 14, 24, and 38 to 39. Variations of several centimeters are not rare.

He calls attention to the fact that the right pleura tends to envelope the œsophagus more than the left by insinuating itself between the œsophagus and the spinal column, especially at its middle portion. The œsophagus does not stand out on the left side and is manifest only by a slight bulging; this may be absent. The pericardium is in front and the aorta behind.

In resection of the cervical portion, a preliminary gastrostomy is done in order that the patient may be nourished, and also to further nutrition before the operation.

The tumor is removed by circular resection at least 2 cm. from each end of the growth. Any deep cervical nodes involved are to be removed at once or later. Advanced cases occasionally require resection of the larynx and trachea.

Great care is necessary to avoid injuring recurrent laryngeal nerves, jugular and subclavian veins, and the thoracic duct.

Methods of restoring the œsophagus include Ach's method of taking a broad skin-flap from the neck and turning it upon itself so as to form a tube with the skin inward. The two ends of the tube are sutured to the upper and lower ends of the œsophagus. The angle formed by the junction of the edge of the flap with the base of the flap is tamponed. It is closed two weeks later and a plastic done subsequently to cover the skin defect.

With the von Hacker method in the first stage the skin-flap is placed in the depth of the wound to form the posterior wall of the œsophagus; the posterior halves of the œsophageal stumps are sutured to the upper and lower borders of the flap, respectively. In the second stage, a skin-flap is shaped on each side of the newly made posterior wall of the œsophagus and the two flaps are turned toward each other, edge-to-edge, and united to form a tube. The tube in turn is covered by lateral skin-flaps mobilized for the purpose.

The mortality is about 36 per cent, due to insufficient nutrition, cardiac failure, pneumonia,

exhaustion, and wound infection, causing sepsis, peri-œsophageal phlegmon, and mediastinitis. Failure to achieve a cure is due mostly to delay in early recognition and failure to remove all infected lymph-nodes.

In resection of the thoracic portion of the œsophagus, previous to the era of differential pressure in intrathoracic surgery, extrapleural methods were attempted. L. Rehn devised a flap method which was unsuccessful on the case upon which it was used. Extrapleural methods are still being used and are being watched with interest, but the ease in handling the lungs and preventing pneumothorax when differential pressures are used makes the transthoracic the preferable method.

The differential pressure methods mentioned are the increases of intrapulmonic pressure, decrease of extrapulmonic pressure, and the intratracheal insufflation of Meltzer-Auer. The neck cuff of the differential pressure chambers interferes with the procedure on the neck, so Torek uses the Meltzer-Auer insufflation method.

Cardiovascular disease, anæmia, and even slight catarrhal conditions of the lungs call for consideration and careful preparation and treatment of the patient.

The indications for intrathoracic resections are: (1) No metastasis must exist after careful examination of all possible organs. The abdomen can be searched at the time when the preliminary gastrostomy is done. (2) The disease should be circumscribed and limited to the œsophagus. Any extension that cannot be easily removed precludes success, and this cannot be determined until the thorax is opened.

Methods mentioned other than the author's include Sauerbruch's for carcinoma of the lower portion by anastomosis of the lower stump with the fundus of the stomach by the aid of Payr's tube or Tiegel's button and suture of the stomach to the diaphragm. The approach is by means of an intercostal incision and drawing the stomach into the thorax. The "cardinal error" in this method is the lack of a serous coat, as in the intestines, necessitating most accurate suturing, which would even then not prevent necrosis of the suture line in the absence of a plastic exudate to protect it.

Wendel's abdominothoracic method in cases of cancer of the cardia consists in a left rectus laparotomy with extension of the incision through the costal cartilages as far as the fifth, opening of the thorax, division of the diaphragm from the rectus incision back to the œsophagus, mobilization of the stomach and œsophagus so they can be brought forward and a resection and anastomosis done. The diaphragm is sutured to the œsophagus so that abdominal drainage can be made for suture line. When anastomosis is impossible, resection and blind closure of both ends are done. This has invariably resulted in leakage from the upper stump.

Considerations leading to adoption of the author's method are: infection, following leakage from either

suture line or stumps suggested the removal from the pleural cavity of all except the well invaginated lower stump. Danger from infection causing pneumothorax, from injury to lungs, led to greater care in handling lungs and in separating the adhesions. Collapse from vagus injury led to care in handling these nerves. The last two led to thoracic incision.

The operation is performed in two stages. In the first stage gastrostomy is performed by Witzel's or Kader's method, and the abdomen examined for metastasis.

The second stage consists in resection of the œsophagus. The patient lies on the right side, the left arm up and well forward so that the scapula is out of the way of the incision. A cushion is placed under the right chest. An incision is made the entire length of the seventh left intercostal space down to the pleura, but not through it. The incision extends from the posterior end of the seventh intercostal space, between the angle and tubercle of the rib, upward to the third intercostal space. The skin and muscles are divided, exposing the fourth to seventh ribs, inclusive. Towels are fastened to the edges of the incision by clamps. The vessels are clamped and tied. This step is done under general or local anæsthesia, and while the vessels are being tied general anæsthesia is induced, the patient intubated, and insufflation anæsthesia started. Moderate intrapulmonary pressure is used while the pleura is being opened. The pleura is opened in the seventh intercostal space and the operability of the tumor determined. To proceed, the fourth to seventh ribs inclusive are divided and the intercostal vessels ligated.

This incision can be modified, but preservation of the ribs gives subsequent support to the thoracic wall. A Balfour abdominal retractor, made so a 17-cm. spread can be obtained, is used and complete exposure obtained.

Any adhesions are carefully separated to avoid injury to the lung. The lung is then laid over toward the front part of the mediastinum and kept only partly inflated. Lung retractors are not recommended, as their use is dangerous and may cause rupture of the lung from pressure on the inflated organ. If the right pleura is opened, increased intrapulmonic pressure is indicated and lung retractors are then needed.

The pleura and connective tissue covering the œsophagus are divided over some portion not involved and the œsophagus lifted out. A tape thrown around it is used as a retractor.

The œsophagus is liberated from all structures from the diaphragm to the upper thoracic aperture, except in cases of a high growth where the lower portion need not be freed. Three centimeters are allowed on the lower stump before division for inverting. The dissection is best done by a Kocher goiter sound or by long Mayo dissecting scissors. To avoid the vagi nerves, dissection must be kept close to the œsophagus. The nerves must not be picked up with forceps. Their anatomical dis-

section is necessary only when they are bound to the tumor. The less they are handled the better, but one may be cut if necessary, provided the other is uninjured.

There is great danger of injuring the right pleura in liberating the posterior surface of the middle portion, and care must be used at this point.

The dissection of the œsophagus where it goes under the left bronchus and aorta is done by blunt dissection, using the finger. Great care must be used not to press on the aorta, as it tends to produce cardiac collapse.

In Torek's successful case the growth was situated in the neighborhood of the arch of the aorta. The latter was freed by ligating and cutting several thoracic branches of this vessel, when it could be lifted forward. The œsophagus is freed above the arch. At the upper aperture of the thorax an opening is made by blunt dissection, using the finger. The dissection is carried upward into the neck and out at the anterior border of the sternomastoid muscle, being completed by sharp dissection under guidance of the finger. A strong silk thread is carried through this incision into the chest, to be used to pull the œsophagus out by.

This method avoids injury to the inferior thyroid artery, one of the sources of blood supply of the œsophagus.

Three ligatures are then applied, the upper one at a safe distance below the growth. Just below this one the œsophagus is crushed with a Payr clamp and a lighter ligature applied. The latter one is invaginated by a purse-string, placed 1 to 2 cm. below it. In case the growth is too low to permit sufficient length to invaginate the lower stump, the diaphragm is divided, the stomach is dislodged upward, and the invagination completed.

The œsophagus is cut between the two upper ligatures and the upper stump cauterized. A second purse-string is placed upon the lower stump if possible and any diaphragm damage repaired.

The end of the upper stump is then pushed up under the aorta, and the strong silk thread, previously introduced into the thorax through the neck incisions, is attached to it and the œsophagus and growth brought out through the incision in the neck. It is wrapped with gauze and left alone until the thoracic incision is closed.

Several pericostal sutures of strong silk are now placed around the seventh and eighth ribs to hold these two ribs together. The ends of the remaining divided ribs assume good alignment. The muscles are closed by layer sutures. The lungs must be inflated before a complete closure of the pleura is made to avoid pneumothorax, though a small amount of air will do no harm. The skin suture is completed.

The upper end of the œsophagus is then held down in front of the chest, the point of amputation decided, and a transverse incision made through the skin at the site corresponding to this point. This wound is connected with the neck wound by

undermining the skin by blunt dissection. The œsophagus and growth are drawn down through this channel, the growth amputated, and the free end of the œsophagus united to the skin margin by a few interrupted sutures.

The most comfortable position for the patient is on the right side and partly on the back. Morphine and stimulants are given as indicated. Camphor, caffeine, digalen, and strophanthus are given for acute cardiac weakness.

After the end of the œsophagus has healed to the skin wound, one end of a special gastrostomy tube is inserted into the œsophageal opening, the lower end into the gastrostomy wound. Gentle massage in a downward direction over the buried œsophagus aids movement of food downward. The patient operated upon is now able to eat practically all kinds of food twenty and one-half months after operation.

Two unsuitable cases operated upon previously died; one five days after operation from cardiac failure; the other the night following the operation.

Torek advises that if the position of the growth is unknown the left side is the best to attack if from, because the right lobe of the liver encroaches so much on the right thorax that there is not enough room for low amputation of the œsophagus. However, if the growth is high the right side may be used, as the only structure apt to interfere is the vena azygos, which may be divided.

For carcinoma of the abdominal portion of the œsophagus, Torek advises an operation worked out by himself in 1913. It is done in three stages: (1) gastrostomy; (2) thoracotomy, as described above for carcinoma of the thoracic œsophagus; (3) an abdominal operation to resect the tumor. An incision is made from the ensiform cartilage along the whole length of the left arch, dividing all the muscles, especially at the posterior end, so that the arch can be raised. At the œsophageal hiatus of the diaphragm the peritoneum is divided and the stump of the œsophagus brought down. The tumor is resected with as much of the stomach as is necessary.

The author briefly describes Zaaier's method which consists in (1) gastrostomy at the pyloric portion by

Kader's method; (2) resection of the fifth to eleventh ribs inclusive on the left side through two 25-cm. incisions so as to bring the point of operation nearer the surface; (3) resection of the tumor by laparothoracotomy. The incision curves from the mammillary line in the left hypochondrium backward to the left posterior axillary line, then to just above the angle of the scapula. The peritoneum and pleura are opened and the diaphragm divided to the hiatus of the œsophagus. The stomach and œsophagus are mobilized by dividing the lesser omentum. The stomach is divided between the clamps and the lower end sutured. The œsophagus is carried to the neighborhood of the posterior axillary line and sutured. The fistula thus formed is connected with gastrostomy by means of a tube.

Ach has proposed a method for carcinoma of the cardia, not requiring opening of the thorax. The œsophagus is exposed at the anterior margin of the sternomastoid and the wound temporarily tamponed. Through an abdominal incision the œsophagus is freed from its diaphragmatic attachments. A small portion of the œsophagus is pulled down, tied with strong thread 2 cm. above the tumor and cut below the ligature. The two ends of the ligature are left one-half meter long. A flexible steel rod with a ring attached to the lower end is introduced into the œsophagus through the mouth. The end of the œsophagus and the ring of rod are transfixed by a needle carrying a strong thread, the ends of which are tied together 12 cm. below the œsophagus. The rod is pulled up, the œsophagus invaginates and follows with moderate resistance. When the lower end of the invaginated œsophagus can be seen in the neck incision, the first string is pulled, thereby invaginating the œsophagus through the neck incision. The fistula formed by suturing the end of the œsophagus to the skin is connected with gastrostomy by means of a tube.

Torek says that whether success will crown this beginning depends on the ability of the profession to operate while the disease is strictly localized. It would be a mistake to operate on unfavorable subjects, as it would throw discredit on the method and discourage early cases submitting to the operation.

DONALD S. GORDON.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Eliot, E., Jr.: *Mesenteric Thrombosis*. *Tr. Am. Surg. Ass.*, Rochester, Minn., 1915, June.

The valuable contributions to the literature of this subject by Jackson, Porter, and Quimby in 1904, by Trotter in 1913, and by A. Reich in 1913 and 1914 render the further elaborated consideration unnecessary at the present time.

The etiology of this condition is both predisposing and exciting. The normal arrangement of the

circulation of the intestinal tract is such that only relatively small segments are provided with an adequate collateral supply. Exceptions do occur, and especially in those cases in which the vascular occlusion develops slowly, the viability of large segments of intestine may be maintained. Even where the clot forms rapidly, as after the division of the larger branches of the mesenteric arteries, necrosis is not inevitable. Thus the accidental division of the colica media is not always followed by the death of the transverse colon, and in one instance

an artery and vein within several inches of the root of the mesentery supplying the lower ileum, that had been ruptured by subcutaneous trauma, were ligated by the author without subsequent complication. The exciting causes of mesenteric thrombosis comprise those in which, through thrombosis or embolism, the lumen of the vessel is occluded, shutting off the blood supply of the corresponding part of the intestine. These need not now be considered in detail. In a very considerable number of cases, however, no adequate exciting cause can be discovered. This is observed most frequently in mesenteric thrombosis of venous origin forming a specially interesting group of cases, for the reason that, although the resulting necrosis is usually complete, the affected loop does not generally exceed 12 to 24 inches in length, and in the absence of any lesion in the vascular system the chances of a successful resection are peculiarly favorable. While the etiological importance of the group of vascular disturbances associated with vascular occlusion must always be recognized, the fact that, occasionally, not one can be identified must not be overlooked and must not lead to the positive exclusion of mesenteric thrombosis in the diagnosis of acute and subacute obscure abdominal conditions.

In explanation of these obscure cases only theories can at present be offered. Reich has advanced the possibility of lymphatic infection through the vasa vasorum lymphatics of the portal veins. The author wishes to suggest the theory that there may be an intimate relation between abnormal intestine fermentation and the consequent absorption of the chemical products by both the lymphatic and venous channels, leading, on the one hand, to peritoneal irritation with the formation of adhesions, and on the other, though rarely, to the coagulation of venous blood. At least adhesions so extensive as to lead to acute obstruction through strangulation have been observed with no prior history to account for them.

The question, Is mechanical pressure ever responsible for mesenteric thrombosis? may be answered in the affirmative, as Martin has reported an instance in which a thrombus in the superior mesenteric vein was found, on operation, in a patient who gave a history of very tight lacing on the night previous to the invasion of the attack. The author also refers briefly to an instance of extensive thrombosis of the veins of the great omentum that had become chronically adherent to an underlying fibroid. In this case, the thrombosed vessel, as large as the adult little finger, passed upward, superficially to the transverse colon, through the gastrocolic omentum to join the gastro-epiploica dextra vein at the greater curvature of the stomach, the clot terminating near the junction of the superior mesenteric and portal veins. Subsequent microscopical examination of that portion of the thrombosed vessel in the amputated omentum showed no abnormality, and bacteriological examination of the clot, which was soft and not organized, showed no organism.

A detailed account of the lesions of mesenteric thrombosis is quite unnecessary. The author wishes merely to call attention to the possibility of temporary circulatory interference by the formation of small thrombi which would account for the brief attacks of severe abdominal pain so frequently given in the histories of these patients; these attacks may occur weeks, months, or even years before the onset of the final attack, in which laparotomy or autopsy reveals a condition of complete necrosis.

The grouping of the clinical symptoms of mesenteric thrombosis into a picture that may be considered fairly characteristic meets with the greatest difficulty. The generally accepted classification adopted by Reich, and substantiated by the analysis of 262 cases, divides mesenteric thrombosis into two distinct groups:

1. A group characterized by the classic symptoms of acute intestinal obstruction in which there is circulatory disturbance; pain, vomiting, and complete constipation being especially prominent symptoms.

2. A second group in which the pain and vomiting are associated with the occurrence of repeated watery stools, occasionally containing blood.

Reich, in his analysis, states that diarrhoea occurs in 41 per cent of the cases and that in 26 per cent the stools contain blood. He also states that in 16 per cent the vomitus contains blood.

The physical signs are much more constant than the clinical symptoms and are of special importance in the second group of cases in which the bloody diarrhoea, should it be present, is suggestive of a colitis. They are the result of peritoneal irritation, and vary in their position according to the position of the affected loop. They comprise diminished and at times asymmetrical respiratory movement of the abdominal wall, rarely visible peristalsis (especially in the subacute cases), equally rarely localized meteorismus, and the all-important symptom of muscular rigidity which, even in mesenteric thrombosis of limited extent, is apt to be more diffuse than localized. In the acute cases marked resistance usually obscures a tumor, while in the subacute cases the rigidity is less intense, and a tumor is occasionally felt either through the abdominal wall or the rectum. Occasionally the fluid in the peritoneal cavity is sufficiently abundant to give dullness, especially with the aid of auscultation, but the author does not believe in the advisability of eliciting shifting dullness, as movement of the patient predisposes to the spread of the infection to distant parts of the peritoneal cavity. The leucocyte count is very important and, as in other infectious processes in the peritoneum, an increase in both the general and polymorphonuclear count is usually obtained.

It must be remembered that the intensity of the physical signs varies within wide limits. In the acute case the abdomen may be retracted and the extension of the peritonitis be most rapid; conversely, in cases of slow development, the clinical symptoms may be so insignificant that the patient con-

tinues at his occupation, and the physical signs may not indicate the serious character of the abdominal lesion until several weeks have elapsed.

Operation is indicated in all cases uncomplicated by serious or advanced visceral changes. The presence of a diffuse and persistent abdominal rigidity, alone, is sufficient warrant for prompt exploration. In this connection the leucocyte count is of considerable value. The difficulty in diagnosis and the consequent likelihood of confusing this condition with some more common infectious process makes the operation chiefly exploratory and, in the larger number of cases, the actual condition is recognized only after the opening of the abdomen. An infected appendix, a gastroduodenal perforation, or an acute cholecystitis are excluded by the serosanguinolent or bloody exudate. Such an exudate points to some form of obstruction associated with circulatory disturbance and indicates the exploration of the intestinal tract, preferably from the ileocecal junction in either direction. In the earliest stages it may be difficult to recognize the affected intestine, as the color changes are not always marked, or the lines of demarcation are frequently indistinct, and the glistening appearance of the serous coat may remain unimpaired for some time. That the operation as suggested by Reich should be postponed on account of this difficulty until the second or third day, when the changes have become marked, is not advisable, in fact it is impracticable, as the diagnosis is rarely made, and such delay would be most dangerous in the more common infectious processes already mentioned for which a mesenteric thrombosis is ordinarily mistaken.

When the nature of the lesion has been determined, resection of the affected loop is indicated where there is a reasonable prospect of success. Reich states that resection is contra-indicated by the presence of portal thrombosis, multiple infarcts, infarcts of the descending colon and sigmoid, and extensive infarcts of the small intestine without a sharp line of demarcation. After the removal of the necrotic intestine, further procedure depends upon the general condition of the patient, the site of the infarct, and the choice of the operator. A consideration of this question leads to the following conclusions:

1. A secondary anastomosis (the operation advocated as the operation of choice by Jackson, Porter, and Quimby) is indicated when the serious condition of the patient demands the completion of the operation in the shortest possible time.

2. Where the line of demarcation on either side of the infarct is not sharply defined.

3. Where the extreme length of the infarct warrants for obvious reasons the division of the intestine at a point which may be oedematous.

4. Where the infarct does not involve the upper end of the jejunum. Should the lesion involve this part of the intestine it is self-evident that a primary anastomosis can alone preclude the rapid loss of

strength which would follow the establishment of an artificial anus.

Conversely, immediate anastomosis after resection may be done in cases where there is a sharp line of demarcation, where the infarct does not exceed 10 or 12 inches in length, where the infarct involves the ileum, and where the general condition of the patient warrants the necessary extension of the operation. In every case of primary anastomosis, post-operative leakage is to be avoided by excising well beyond the limit of normal circulation, by reinforcing the line of anastomosis, if possible, with an omental flap, and by leaving the sutured loop approximately near the anterior abdominal wall, a short non-rigid drain being previously inserted to its immediate proximity, so that, in the event of leakage, the discharge will be conducted away from the peritoneal cavity.

The methods of reestablishing the continuity of the intestinal canal do not differ materially from those ordinarily in use after resection of strangulated intestine from any cause. Lateral anastomosis is always the operation of choice where the divided ends are of unequal caliber, or where one or both are distinctly oedematous. In cases in which the small extent of the infarct enables the resection to be carried out in small intestine, unquestionably healthy, an end-to-end anastomosis is not contra-indicated. In a case of infarct involving the beginning of the jejunum, Kölbing has done an anterior gastro-enterostomy with success, and in one instance of infarct in the end of the ileum, Weil has done an end-to-side anastomosis between the ileum and the transverse colon. The comparative value of lateral and end-to-end anastomosis is difficult to establish, owing to the small number of successful cases.

To Reich's tabulated list of 18 recoveries must now be added the successful cases of Weil and Davis and the cases reported in this paper by Wheelwright, Jameson, and the author, making a total of 23 recoveries in about 100 operated cases. In five instances a secondary anastomosis was done by the end-to-end suture method. In the others, end-to-end and lateral anastomoses were variously done by both suture and button. It is interesting to note that in both secondary and primary anastomosis, post-operative faecal fistula has occurred in no less than 8 cases; and that each method of anastomosis has been followed by at least one instance of this complication. The fatalities included 21; in 14 of which a primary anastomosis was done as follows: in 5 by the end-to-end suture, in 4 by the end-to-end button, and in 4 by the side-to-side suture method. There were 7 fatalities following secondary anastomosis.

Other post-operative complications, besides the justly feared leakage, that have occurred in cases which recovered include gastromesenteric ileus, acute obstruction from adhesions, retention of the button, the formation of a gradually shrinking mesenteric tumor, parotitis, and the occurrence of

persistent bloody stools. The late results in the successful cases should be investigated. Where the cause of the thrombosis cannot be discovered or where the thrombosis is the result of some vascular lesion which persists necessarily after the operation, a recurrence does not seem to be at all unlikely. In the 3 cases herewith reported, Wheelwright's is well and strong after 10 months, with the exception of a slight attack of colitis which occurred recently. Jameson's patient is in excellent condition 20 months, and the author's patient is well two years, after the operation.

Of the successful cases collected by Reich, the condition of Delatour's patient three and one-half years after the operation was entirely satisfactory. There had been no recurrence of any abdominal symptom. An equally favorable condition may be reported of the patients of Schley and Green almost four years after the operation. During this time, however, Green's patient has had a localized inflammatory process in the apex of one lung, which has entirely disappeared.

GASTRO-INTESTINAL TRACT

Jefferson, G.: A Note on the Passage of Fluid Through the Body of the Human Stomach. *Arch. Röntg. Ray*, 1915, xix, 414.

In the normal orthotonic stomach the barium (or bismuth) meal usually passes down the lesser curvature in a narrow stream from the cardiac end of the oesophagus, instead of streaming impartially over the walls of the stomach. The author undertook to find an anatomical explanation for this confinement of the bismuth stream to the lesser curvature. He examined 22 adults of both sexes, in 82 per cent of which the bismuth descended in this manner.

No gross indication of a canal along the lesser curvature can be seen on inspection of the ordinary adult stomach, though Lewis has shown on his reconstruction models that such a canal is present in the human foetus, which he has named the "canalis gastricus." This canal reaches its most perfect form in ruminants, and its presence in the human stomach has been hinted at since the days of Willis. While the adult human stomach shows no external sign of such a canal, the mucosa is thrown into longitudinal folds along the lesser curvature, three of which are especially prominent. Waldeyer thought these folds formed a path whereby fluids gained the pars pylorica, and named it the *Magenstrasse*. Jefferson found it difficult to believe, however, that these mucosal folds alone could possess the power of confining ingesta to the lesser curvature without help from the underlying muscle. Accordingly he has made dissections which, he thinks, show that the oblique muscle is arranged so as to form an inverted U over the stomach, and by its specialized construction is capable of shutting off, with the help of the mucosal ridges, a physiological canal along the lesser curvature. ALBERT MILLER.

Hamann, C. A.: Fistulous Communication Between Stomach and Colon Following Gastro-Enterostomy. *Tr. Am. Surg. Ass.*, Rochester, Minn., 1915, June.

A gastrojejunal ulcer, following gastro-enterostomy, may result in a fistulous communication between the stomach and transverse colon. There are some thirteen of such cases upon record.

The leading symptoms of such a condition are faecal odor of the gastric eructations and perhaps faecal vomiting, diarrhoea (sometimes lenteric in character), and loss of weight. As there is usually an opening into the jejunum also, the term "gastro-jejuno-colic" is an appropriate one.

The author reports a case in which this condition ensued after gastro-enterostomy and partial gastrectomy. The patient recovered, after separation of the stomach, jejunum, and colon from one another, closure of the openings in the stomach and jejunum, resection of four inches of the colon, and the making of a new gastro-enterostomy.

Zwaluwenberg, J. J.: The X-Ray Diagnosis of Peptic Ulcer. *J. Mich. St. M. Soc.*, 1915, xiv, 230.

Workers in the field of röntgenologic diagnosis of the digestive tract are divided into two main camps. One places greater emphasis upon the screen examination and a system of syndromes built upon the size, shape, position, mobility, peristalsis, and motility of the stomach, in conjunction with clinical and laboratory findings. This method is especially popular in Europe and has able exponents in America. The other camp depends largely upon the perfection of its plates and pretends to make a more nearly pure anatomical diagnosis. Each method has its obvious advantages and disadvantages.

The X-ray findings of ulcer differ according to its character, whether simple, perforating, or complicated. The crater of an ulcer which has perforated or is about to perforate can be visualized. Simple ulcers can be diagnosed only by altered function. They may show (1) reduced motility, (2) spasm of the pylorus, (3) localized spasm of the muscularis at the level of the ulcer, (4) localized tenderness over the ulcer, (5) normal or reduced peristalsis, and (6) possibly dilatation.

Duodenal ulcer may manifest hypermotility, hyperperistalsis, dilatation of the antrum, and tenderness over the duodenum. An important sign is deformity of the bulb, as pointed out by L. G. Cole.

Gastric ulcer and advanced carcinoma can scarcely be confounded, but carcinomatous degeneration of a peptic ulcer is impossible of differentiation.

ALBERT MILLER.

Peck, C. H.: Gastric and Duodenal Ulcer. *Ann Surg.*, Phila., 1915, lxi, 406.

The author reviews 120 cases of non-malignant ulcer of the stomach and duodenum operated on by members of the surgical staff of the Roosevelt Hospital of New York, between January, 1910, and January, 1915.

The report is chiefly analytical and statistical. Of the total number of ulcers, 73.3 per cent were duodenal, and 26.7 per cent gastric. Of the 88 duodenal ulcers, 71 were of the chronic indurated type and 17 were acute perforations. Of 30 gastric ulcers, 17 were chronic non-perforative and 13 acute perforations.

Considering the group as a whole, 78.3 per cent were males, 21.7 per cent females. In the duodenal group 83 per cent were males, and in the gastric group 70 per cent.

All of the 17 acute perforated duodenal ulcers occurred in males between 23 and 52 years of age. Of the 13 acute perforated gastric ulcers, 9 were males and 4 females, ranging from 23 to 49 years of age.

All cases together, the number occurring in each decade from 20 to 50 years was almost equal; from 50 to 60 years somewhat less, and between 60 and 70 fewer, but still a goodly number.

Studied in groups, in 71 cases of chronic duodenal ulcer, all verified by operation, posterior gastro-enterostomy was performed. In 44 the site of ulcer was anterior, generally close to the pylorus; 19 were posterior, 2 multiple, 1 in the second portion of the duodenum, 5 not stated.

Where possible, in addition to gastro-enterostomy, the ulcer was enfolded by Lembert sutures, causing some pyloric occlusion. Only one pyloric exclusion was done. This case bled before and after gastro-enterostomy, and the exclusion was performed one year after the gastro-enterostomy. Three years later the patient was still troubled with pus and occasional hæmorrhages. Appendectomy was done in 25 of these 71 cases; cholecystostomy for gallstones in 2 cases.

The symptoms of this group were: hæmatemesis in 13 cases, intestinal hæmorrhage in 43 per cent of the observations, coinciding with the experience of others that it occurs in less than 50 per cent; pain occurring two to four hours after eating, relieved by food and alkalines, noted in 24 cases, less than 50 per cent. In 26 additional cases, pain was irregular, had no relation to food, or in more than 50 per cent the character of pain departed from the classic duodenal type. Pain of some sort was a constant symptom.

Vomiting was present in about one-half the cases; in a few it was persistent and frequent.

Gastric analyses on 40 cases.

20 cases free HCl—below 40, equals 50 per cent.

13 cases free HCl—between 40 and 60.

7 cases free HCl—above 60.

6 cases free HCl—above 90.

In no case was absence of free HCl noted.

The red blood counts on 30 cases showed 4 cases above 6,000,000, 8 cases between 5,000,000 and 6,000,000, making 12 cases, or 40 per cent, with some polycythæmia. Eighteen cases, 60 per cent, had a count of 5,000,000 or less. Making allowance for possible secondary anæmia, the above would seem to indicate that polycythæmia is of only

limited diagnostic value. Of the 71 cases, 65 recovered and 6 died. The mortality of 8.4 per cent being explained by poor operative risks on account of age, extreme cachexia, and alcoholism. A table is given of the causes of deaths. Definite reports on 36 cases were obtained, only 4 being unsatisfactory: One still had pain and hæmorrhage referred to above; one had a slow, but satisfactory convalescence after secondary entero-anastomosis for recurring vomiting; two cases are much improved, but have pain and indigestion at times. Relief from pain, after years of suffering, has been striking in many cases. In 19 cases of chronic gastric ulcer the results were less satisfactory than in the duodenal type; gastro-enterostomy was performed in 12 cases; partial gastrectomy in 3; excision of ulcer with gastro-enterostomy was performed in 1; exploratory celiotomy in 1. There were 3 deaths, and one patient died from pneumonia shortly after discharge. The position: 12 on the lesser curvature some distance from the pylorus, 2 on the posterior wall, 4 pyloric, 1 not stated.

Hæmatemesis was present in 10 cases; absent in 7; not mentioned in 3. Pain, a constant symptom, was made worse by ingestion of food; relieved by vomiting. The pain varied in intensity; seldom was there a free interval of several days and weeks as in duodenal ulcer; on the contrary it was more constant and severe than in duodenal ulcer.

Gastric analysis of 12 cases showed 8 cases free HCl, 40 or below; 2 cases free HCl, 60; 2 cases free HCl, absent.

These findings emphasize the fact that gastric analysis is of limited diagnostic value.

As to the treatment, the series is too small to draw positive conclusions, but Peck believes that, in general, ulcers near the pylorus with induration and which are difficult to differentiate from carcinoma should be excised by pylorotomy or gastrectomy. When situated near the middle of the lesser curvature or the cardiac end one may consider: (1) V-resection with suture with or without gastro-enterostomy; (2) Balfour's cautery puncture of the ulcer with closure of the hole by suture with or without gastro-enterostomy; (3) gastro-enterostomy alone without direct attack on ulcer.

Peck speaks of the ease of cautery puncture for ulcers high on the lesser curvature not suitable for V-excision as a simple and quick means of dealing with this kind.

He deems it wise to do a gastro-enterostomy in every case, whether cautery puncture or V-excision is done, as it is possible that the chemical change in the gastric juice or its contents has a favorable influence on the ulcer. Of 3 cases of partial gastrectomy, 2 recovered, 1 died of shock. The two cases which recovered are well and free from symptoms more than two and a half years after operation.

Of 12 cases of gastro-enterostomy alone, there were 3 deaths: 1 from persistent vomiting; 1 from pneumonia and pulmonary embolism on the eighth day; the other died from pneumonia after discharge

from the hospital. Of the 9 which recovered, 3 are known to be free of symptoms at 21, 14, and 4 months after operation; 2 have pain and indigestion at 12 and 18 months after operation; 4 cases are not traceable.

The group is too small to draw conclusions other than to say it is evident that gastro-enterostomy for gastric ulcer without excision is less satisfactory than in duodenal ulcer.

There has been no development of carcinoma in a gastric ulcer unless in some of the non-traceable cases or in one which refused secondary operation for persistent symptoms and marked cachexia.

Of the 17 cases of perforated duodenal ulcer, 1 died of pneumonia on the seventeenth day; 1 after secondary operation for subphrenic abscess 22 days after primary operation; 2 others died shortly after leaving the hospital: 1 of pulmonary tuberculosis lighted up by operation, 1 from ulcer on the inferior wall against the head of the pancreas. The primary operation in the latter case showed a large abscess with gas, and as the perforation could not be located, closure was impossible.

No case died from extension of the peritonitis. The author feels that gastro-enterostomy does not seem to have an unfavorable influence on mortality.

As to the time between symptoms and operation, 1 case had symptoms for 3 days, death from pneumonia: 1 for 5 hours, death from subphrenic abscess. Of 15 recoveries, 9 were operated upon within 12 hours; 4 in 12, 27, 31, and 48 hours, respectively: in 2 the history indicated perforation several days before, with partial sealing by adhesions and fresh symptoms from leakage for a few hours before operation.

Of 17 cases, 10 were closed without drainage, 7 drained. One fatal case was drained, 1 was not.

It may be concluded from this study that cases of acute perforated duodenal ulcer, if operated upon promptly, should rarely die of peritonitis; that drainage can be safely omitted in the average case, but should be used if the closure of the perforation is insecure, or if the abscess is present or likely to form; that gastro-enterostomy should not increase mortality when used in properly selected cases. Though opinions are divided regarding the performance of gastro-enterostomy in the presence of acute perforation, Peck thinks it reasonable to suppose that a permanent cure would be aided thereby, though many undergo spontaneous cure and remain well after perforation and suture.

Peritonitis present at the time of operation varied from a moderate amount of fluid in the upper abdomen to a generalized process involving both flanks of the pelvis. Drainage of the pelvis or flanks was resorted to in one case only. Of 6 cases, 4 had gastro-enterostomy performed and are reported well over periods of from one and a quarter to four years; one had pain and gastric symptoms after three years. One case operated upon two years previously without gastro-enterostomy, suffers from pain and indigestion constantly.

Of 13 cases of perforated gastric ulcer, 7 recovered, 6 died. The 6 fatal cases died of peritonitis and complications; 4 of the 6 were operated upon from one to five days after perforation, with peritonitis already developed; 2 cases were operated on under thirteen hours after perforation. Gastro-enterostomy was not performed in any of the fatal cases, but was done in addition to suture closure in 5 of the 7 cases which recovered.

In 5 cases the perforation was prepyloric; in 5 on the lesser curvature at some distance from the pylorus; in 3, 2 of which were fatal cases with advanced peritonitis, perforation was not accurately located.

Of the 7 cases which recovered, 3 were operated on within 6 hours, one 12 hours, 2 localized epigastric abscesses; in 1 the perforation was partly sealed by adhesions.

In the prepyloric group, the indications for operation were the same as in duodenal ulcer: gastro-enterostomy when the patient is in good condition and there is a probability of pyloric obstruction. In perforation on the anterior wall or the lesser curvature, simple closure is sufficient—gastro-enterostomy can be performed later. Only 2 cases out of 17 of duodenal perforation did not give a history of previous indigestion. Practically all the gastric cases had had previous symptoms of ulcer.

X-ray is of great aid in the chronic cases, for diagnosis and also as an aid in eliminating negative explorations.

DONALD S. GORDON.

Graham, C.: Notes on Gastric and Duodenal Ulcers. *Tr. Marshfield Clin. Meeting*, Marshfield, Wis., 1915, June.

After carefully reviewing the histories of his cases of peptic ulcers, Graham states that he is unable to obtain any pathognomonic symptoms or combination of symptoms whereby the exact location of the lesion might reasonably be determined. In the clinical diagnoses in a series of approximately 1,300 cases of operatively demonstrated duodenal ulcers there were 702 cases, 54 per cent, primarily called duodenal ulcer, while 323, 24.8 per cent, were classified as gastric ulcer. One hundred seventy-five cases, 13.5 per cent, were primarily considered as gall-stone disease. In 64 cases appendicitis entered largely into the diagnosis, while cancer was considered in 1.5 per cent and about 1 per cent were unclassified. In 107 of these, gastric or duodenal ulcer was given as a secondary diagnosis. Of 450 cases of operatively demonstrated gastric ulcer, 248, 55 per cent, were classified as gastric, 119, 26.5 per cent, as duodenal, and in 31, 6.5 per cent, the gastric diagnosis was placed second. In 40, or .8 per cent, the gall-bladder was considered diseased. Cancer was considered in 4.8 per cent of the cases, appendicitis in 1.7 per cent, those not classified about 2.5 per cent. He states further that in the diagnoses of these cases, extrinsic causes, such as, gall-stone, appendicitis, and tuberculosis, should be kept particularly in mind, since they may

give the regular gastric syndrome or they may give an irregular history, all of which is confusing and leads to provisional diagnoses.

He divides the clinical syndrome into three groups: (1) The regular type of duodenal ulcer in which pain or distress comes within 2 to 5 hours after meals, accompanied by gas, sour stomach, and vomiting; one or all of which appear at about the same hour and continue until the next meal, or until food, an alkali, vomiting, or irrigation brings relief from the acid condition of the stomach. (2) The regular type of gastric ulcer which has the same periodicity and the same group of symptoms, not so clear-cut as in the duodenal lesions, though in at least one-fourth of the cases the difference is quite indistinguishable. Pain or distress comes sooner after meals, and does not continue so clearly to the next meal. It is often eased by food, though not so often as the pain of duodenal ulcer. Fear of food-pain is more often noted. Food in small amounts gives ease, while in large amounts it gives pain. (3) The irregular type of peptic ulcer in which the history of the distinctive time of onset of symptoms and their control has been lost. Such histories are found in cases of obstruction, perforation with adhesions, hour-glass stomach, saddle ulcer, lesions of large areas, or in any condition where function and movement are limited.

Though duodenal and gastric ulcers are apparently so nearly similar in their final analysis there are some points which aid in their differentiation. Each case necessarily calls for its own careful consideration because no symptom can more than suggest location and often, as the histories show, the gastric case may have a pure duodenal syndrome, and the duodenal case may quite as clearly give the gastric type of symptoms. However, the diagnosis of a gastric lesion being made the question of its exact location is not paramount. How best to treat the lesion and to conserve the patient's health is the vital point.

Hamburger, W. W., and Leach, J. J.: Gastric and Duodenal Ulcer; the Influence of Operative Procedures on Gastric Motility and Secretion. *J. Am. M. Ass.*, 1915, xliv, 1745.

Nine gastric and eight duodenal ulcer cases form the basis for this study. Of the 17 patients, 8 received no or only partial relief from their complaints; 9 cases resulted in marked benefit or complete cure. The patients were examined, for the most part, on an average of from three months to two years following the operation; one patient as early as five weeks, one as late as twelve years. So far as possible, all patients were submitted to complete physical examination, test breakfast and motor meal, fluoroscopy and röntgen-ray examination before and after operation.

Two cases of gastro-enterostomy without pyloric exclusion showed a rapid (two-hour) discharge of bismuth up to and by way of the gastro-enterostomy opening, with delay (six hours) of food beyond the

opening, the bismuth finally passing out through the pylorus. This was true of the motor meal plus bismuth, as well as the regular bismuth-buttermilk meal. In one case the delay of the contents beyond the opening amounted to a true stasis. Another case showed rapid early discharge up to the level of the opening, but delay of the residue in the small sac below the level of the gastro-enterostomy opening. Placing the patient in a recumbent position allowed this residue to discharge.

As in the case of gastric ulcer, pyloric exclusion plus gastro-enterostomy was attended by the best results. In two cases with the pylorus left patent, marked stasis occurred in the overfilled and distended duodenum at the site of the ulcer. In this case, in spite of the wide, well-placed enterostomy opening, the maximum discharge occurred through the patent pylorus.

Cases with normal pre-operative findings developed post-operative stasis and hypersecretion similar to that of gastric ulcer.

Two duodenal ulcer cases showed late — four and twelve years, respectively—gradual closing of the gastro-enterostomy opening, necessitating a second anterior operation.

The authors' conclusions are as follows:

1. Operative procedures on stomachs with normal motility and secretion frequently produce stasis, hypersecretion, or both.

2. Stasis may be caused by pylorospasm, by contents stranded below the level of the gastro-enterostomy opening, or by contents held between the opening and the pylorus.

3. Hypersecretion may occur coincidentally or secondarily to stasis, but also independently as a true post-operative hypersecretion, similar to the same conditions in dogs. This hypersecretory period is probably due to operative trauma and is likely to be temporary. Post-operative hypersecretion explains certain discrepancies between bismuth and motor meal findings.

4. Operative procedures on stomachs with delayed motility and hypersecretion usually reduce motility to normal (but not beyond), and lower hyperacidity. This is particularly true if the pylorus is closed. If the pylorus is left patent, vicious circle, stasis in the duodenum, spasm, or secondary contracture of the opening are liable to continue the abnormal gastric function or to increase it.

5. Non-relief from surgical interference in gastric and duodenal ulcer is due to (1) lack of properly placed surgical indications; (2) lack of thorough and prolonged pre-operative medical treatment; (3) failure to devise the proper surgical procedure to meet the individual case; and (4) lack of prolonged post-operative treatment. EDWARD L. CORNELL.

Martin, F., and Carroll, A. H.: Rôle of Gastro-Enterostomy in Treatment of Ulcers. *Ann. Surg.*, Phila., 1915, lxi, 557.

The authors report a case coming under their care which had previously been operated upon by

another surgeon for gastric ulcer, without relief of the symptoms, and in addition the patient noticed that food recently ingested was passed by the rectum. The X-ray pictures showed that bismuth passed from the stomach by the stoma and also by the pylorus.

Upon exploring the abdomen a chronically inflamed appendix was found and removed, and also it was found that an anastomosis had been made between the posterior wall of the stomach and the ileum about 20 to 24 inches from the ileocecal valve. On account of the patient's condition the normal relation was not restored between these organs until a subsequent operation, since which time the patient has been in good health.

The authors point out that, considering that almost the entire small intestine was sidetracked, the bulk of the food must have passed through the pylorus, notwithstanding the opening in the lower part of the stomach, where gravity drainage would have been effective if possible.

The good accomplished by gastro-enterostomy is either the diverting of the contents of the stomach away from the pylorus for a time or permitting a reflux of the alkaline contents of the jejunum into the stomach. The great number of recurrences following gastro-enterostomies and the fact that statistics show that 70 per cent of cases of cancer of the stomach give a history of gastric ulcer would seem to warrant excision of the ulcer-bearing area, and this the authors think is best done by a pylorotomy. They have done this in 5 cases successfully, and in 3 of these cases the microscopic examination showed beginning malignancy. D. L. DESPARD.

Thaysen, T. E. H.: Typical Röntgen Pictures of Carcinoma of the Stomach (Das Ventrikelkarzinom in typischen Röntgenbildern). *Arch. f. Verdauungskr.*, 1915, xxi, 47.

There are two chief forms of stomach cancer to be considered: diffuse infiltrating carcinomata and those in which there is a circumscribed tumor. In the tumor-forming varieties the cancer appears as a defect in the stomach shadow, with jagged ill-defined edges. In cancers of the pyloric the pyloric part of the shadow is lacking. The boundary line is ill-defined and passes gradually over into the surrounding shadows. As a rule in spite of active peristaltic motion, the stomach contents is not emptied into the duodenum, because this form of carcinoma generally causes stenosis of the pylorus. In tumorous carcinoma of the fundus there is a more or less circular defect in the descending part of the stomach shadow. There are often tongue-shaped projections or irregular strips of shadow running from one edge of the defect to the other. Generally there is no peristaltic movement immediately around the defect. The stomach contents is emptied normally through the pylorus.

The prototype of diffuse infiltrating cancer of the stomach is scirrhus carcinoma. This does not change the form of the stomach but causes contrac-

tion of its walls so that the lumen of the organ is markedly decreased. The röntgen picture shows only a small stomach, situated high up with irregular and ill-defined edges. If the cancer has infiltrated the entire stomach, peristalsis is decreased or even stopped, but considerable quantities of the barium meal can be seen in the small intestine soon after the meal, probably due to insufficiency of the pylorus. Scirrhus carcinoma generally begins at the pylorus and may remain limited to this region for a long time. In such cases the pylorus is narrower than it should be and peristalsis is stopped, but the barium is seen in the small intestine; instead of being emptied as it is normally, however, it flows in in a small continuous stream. The pylorus has been transformed into a rigid tube through which the stomach contents flows continuously. This phenomenon of insufficiency of the pylorus can be demonstrated only in diffuse carcinoma which has infiltrated the pylorus, or rarely in tumorous cancers which have not entirely occluded the pylorus.

There are various transition forms between these two extremes including the medullary and gelatinous cancers, in which the shadow often takes very peculiar forms which are illustrated.

A defect in the pyloric shadow may sometimes be caused by conditions outside the stomach such as tumors in the gall-bladder, pancreas, or even the colon, and adhesions which cover the pylorus and prevent it from appearing in the picture. These conditions however can generally be diagnosed clinically. Spastic contraction of the pylorus may simulate tumor of the stomach, and to avoid this error repeated examinations should be made; the tumor will sometimes disappear if it is due to spastic contraction. To an inexperienced observer a small normal stomach may look like a case of diffuse scirrhus carcinoma. This will offer no difficulty after enough experience has been gained.

Of course röntgen examination should be used in connection with, not to the exclusion of, clinical methods of diagnosis. Case histories are given of 3 cases of scirrhus carcinoma and 4 of cancer of the fundus in which röntgen examination was especially valuable.

The value of röntgen examination in the diagnosis of cancer of the stomach is considerably limited by the fact that it gives no information as to possible metastases, for there may be a very small primary tumor and enormous metastases. On the other hand röntgen examination may show that a cancer is inoperable and thus an exploratory operation may be avoided. A. Goss.

Gibson, C. L., and Beekman, F.: Occlusion of the Pylorus. *Ann. Surg.*, Phila., 1915, lxi, 423.

From experimental work on dogs, employing several methods of pyloric occlusion, the authors come to the following conclusions:

For the border-line cases, where occlusion would seem to be indicated more as a matter of expediency than of actual necessity, they recommend the less

severe measures, such as constriction or infolding with sutures. Of the former method, they believe at present that the application of a free flap of fascia (Wilms), when it can be applied, promises the best result. If, however, the adhesions around the pylorus are such that it would be inadvisable to separate them, the authors recommend that the constriction be produced by one of the methods of infolding with peritoneal sutures (W. J. Mayo and Moynihan). They would reserve the more radical procedures, such as the Eiselsberg unilateral exclusion, for the severe lesions which call unquestionably for certainty of results. They feel, however, that even in these cases this particular operation will seldom be indicated, for as a general rule these severe lesions would probably be better treated by resection, which in severity but little exceeds the unilateral exclusion.

I. GERBER.

Lier, E. H. Van: Exclusion of the Pylorus and Treatment of Ulcer of the Duodenum (Pylorus-ausschaltung und Therapie des Ulcus duodeni). *Beitr. z. klin. Chir.*, 1915, xcv, 459.

Van Lier performed a number of experiments on dogs to test the comparative value of the various methods of excluding the pylorus that have been proposed in the treatment of ulcer of the duodenum. The object in excluding the pylorus is to prevent the ingesta from passing into the pylorus and thus prevent the irritation of the duodenum by the gastric juice.

The Wilms method and the method of crushing the stomach and duodenum on either side of the pylorus and bringing the ends together give tolerably good results, but the pylorus still permits the passage of stomach contents, while longitudinal plication closes the pylorus so effectively that it will not pass water or bismuth for three months. Duodenal plication is the simplest and therefore the best method. If it is impossible on account of adhesions of the duodenum, Kelling's method is indicated. He makes a fold in the stomach with two button sutures and then brings this fold over and sutures it to the duodenum, thus producing kinking and stenosis of the pylorus. Various methods of constricting the pylorus by means of ligatures, strips of fascia, or other means have been proposed, but these frequently do not hold permanently and the pylorus becomes patent again.

In some cases in which there has been severe inflammation around the duodenum and the intestine is firmly fixed by adhesions it is impossible to exclude the pylorus absolutely, and yet these cases frequently react well after gastro-enterostomy. To understand why this is true, the effect of the different methods of gastro-enterostomy must be considered. The Y method has the advantage of never producing a vicious circle, but it has the great disadvantage of often giving rise to peptic ulcers, and this danger is especially great in ulcer of the duodenum, because there is usually marked hyperacidity. In the Y method little bile flows back into

the stomach, while in the X method the stomach is flooded with bile, causing neutralization of the acidity of the gastric juice. This neutralization is a great benefit, for if the pylorus is not completely occluded the ulcer is not so much irritated as it would be by an acid stomach content.

Peptic ulcers seldom appear after an X anastomosis, and a vicious circle can be avoided by making the loop very short. Therefore the best method of treating duodenal ulcer is a von Hacker gastro-enterostomy followed by Moynihan's infolding of the ulcer, because it neutralizes the acidity of the stomach contents and effectively occludes the pylorus, the two necessary conditions for the healing of the ulcer.

A. Goss.

McGlannan, A.: Intestinal Obstruction Due to Sigmoid Volvulus; Report of a Case Occurring in a Child. *J. Am. M. Ass.*, 1915, lxiv, 1744.

To the series of 191 cases reported in 1912, the author has added the records of 66 cases of intestinal obstruction, making the present number 257. Among the new cases is one of sigmoid volvulus occurring in a child of six years.

Acute obstruction is much more common in the small than in the large intestine, 201 to 56 being the proportion. Volvulus of the sigmoid occurred 10 times in the series, making about 18 per cent of the large intestine cases and 3.8 per cent of all forms of obstruction. Volvulus of the small intestine occurred 11 times, twice in children. Of the 257 cases, 41 occurred in children under 12. Eighteen of these cases were ileocecal intussusceptions and 6 were intussusceptions of the small intestine proper. Intussusception, therefore, makes up more than half of all the cases occurring in children and is eight times as common as all forms of volvulus in this class of patients.

The following case is reported: The patient, a white girl, aged 6, gave a history of two days' illness, the onset with cramps and diarrhoea, followed by vomiting and tenesmus. No blood was in the movements. The patient was anæmic, toxic, extremely listless, pulse rapid and thin, respirations thoracic and shallow. The abdomen was generally distended and tender. Muscle spasm and rigidity were most marked in the right lower quadrant. There was dullness in both flanks. The white blood count was 41,500, polynuclears 91 per cent.

Operation was performed immediately under novocaine infiltration and ether anaesthesia. A long right rectus incision was made. When the peritoneum was opened, a large quantity of straw-colored fluid poured out. The small and large intestines were distended, but not inflamed. A hasty exploration of the right iliac fossa showed a healthy appendix and a greatly distended cæcum. A much dilated loop of large bowel extended from the left over into the right lower abdomen. This loop was followed into the left fossa and proved to be the fundus of a sigmoid volvulus, which had twisted on its footpoints through an arc of about

300 degrees. This was untwisted and a rectal tube, passed through the anus by an assistant, was guided by a hand in the abdomen up into the dilated loop. There was an immediate expulsion of gas and watery feces through the tube, with relief of the distention of the bowel. The abdomen was closed in layers, using fine silk sutures. The stomach was washed out and an ounce of castor oil given through the tube. Five hundred ccm. of salt solution and one dose of 1/200 grain atropine were given subcutaneously.

The patient was quite toxic for the first 24 hours after the operation and lavage of the stomach was required. After this she improved steadily and in ten days was out of bed, the wound having healed.

Six weeks after the relief of the obstruction, the second operation of resection and anastomosis was performed for the removal of the redundant sigmoid. The divided ends of the bowel were turned in and the anastomosis made by the method described by Bloodgood. The turned-in ends were sutured outside the parietal peritoneum and drains carried down to them. The muscles, fascia, and skin were closed up to the drains.

Leakage from one end of the bowel occurred on the fifth day and prevented primary healing. The sinus closed spontaneously on the twenty-second day and the wound healed tight a week later. When discharged from the hospital, the patient's bowels moved daily without cathartics, her digestion was unimpaired, and she was in perfect health.

EDWARD L. CORNELL.

Winthrop, G. J.: Chronic Enteric Intussusception Due to Intestinal Tumors. *J. Am. M. Ass.*, 1915, xlv, 1303.

Winthrop discusses chronic intussusception briefly and gives a report of two cases, one of which was multiple. He apparently accepts Treves' theory that the tumor causes the condition by exciting an intense peristalsis at the point of attachment of the tumor and not by the tumor preceding and, as it were, drawing on the intussusception, as the tumor usually forms the apex of the intussusception, as in the cases he reports.

He states that the lateral implantation of the growths and the fact that the processes were of the ascending variety would lead to the view that the portion of the intestine bearing the tumor prolapsed toward the intestinal lumen, excited energetic peristalsis, and was then "swallowed" by peristaltic waves from above.

He gives casual reference to a small amount of literature by Van Hook, Kanavel, and Moynihan.

His first case was a colored man of 26 years, with negative family history, and whose past history suggested nothing. For a period extending over several months he had had a series of attacks simulating acute intestinal obstruction. These attacks were acute in onset and subsided quickly. He was free from the attacks for two years, when he was seized with one which lasted ten days

previous to his being seen by the author. The pain would start in the right iliac fossa of the abdomen and travel up toward the liver. He would feel a "hard lump" in the region of the pain, would become nauseated and vomit. Vomiting would relieve the pain, and the "lump" would disappear. The matter vomited was recently ingested food, and never distinctly fecal. Constipation almost approached obstipation. Examination showed him to be well nourished; heart and lungs negative; Wassermann negative.

Marked peristaltic waves were present in the left hypochondriac, lumbar, and iliac regions. The waves were slow and moved downward. A rounded firm and slightly tender mass, variable in size, at times was felt in the left lower quadrant. The mass was freely movable, was absent between attacks, but returning in the same position with onset of pain, it would grow larger, extending from the left lower quadrant to the splenic area. Its greatest size was six inches long and three to four inches wide. Rectal, digital, and proctoscopic examinations were negative.

Operation revealed an iliac intussusception six inches in length, about eight feet from the cæcal end of the intestine. The invagination was easily reduced and at its apex was found a hard tumor mass within the intestine. The associated intestinal nodes were enlarged. Six inches of the small intestine, including the growth, were resected and a side-to-side anastomosis made. The recovery was rapid, the patient leaving the hospital on the tenth day.

The pathological report was a papillary adenoma with no invasion of the wall of the gut beneath the new-growth.

The second case was a colored man of 20 years, who had a similar history of a series of attacks of intestinal obstruction lasting over a period of three months. A mass would appear with the onset and disappear with cessation of the attack of pain. There was a considerable loss of weight. Examination was negative except for a mass in the left lower abdominal quadrant.

Operation revealed an intussusception four inches long and a papillomatous tumor projecting into the lumen of the gut. Three inches of the intestine, including the tumor, were resected and a lateral anastomosis was done. Three feet proximal to the first a second invagination was found. Six inches of the upper ileum were removed with the tumor, and an end-to-end anastomosis done with suture.

The largest invagination was two feet below the duodenojejunal junction. It involved three feet of intestine and was reduced with difficulty. Its apex was formed of a portion of intestine sixteen inches long containing six papillomata. This portion including growths was resected and the ends united by means of a Murphy button. A fourth invagination was found still higher in the jejunum, but was easily reduced. Shock precluded further resection.

The wound healed perfectly, but the patient died on the fifteenth day from pulmonary embolism. Necropsy revealed a small walled off abscess at the site of the end-to-end anastomosis, caused by leakage. There was a compound pendunculated new-growth in the duodenum, each unit of which was mushroom shaped. There was an intussusception at the junction of the duodenum and jejunum, five centimeters long, at the apex of which was a tumor mass.

Death occurred from pulmonary embolism, intussusceptions, and abdominal abscess.

The pathological report was multiple adenoma and adenocarcinoma with metastases to mesenteric glands.

DONALD S. GORDON.

Ashbury, H. E.: Röntgenological Aspect of Intestinal Stasis. *Hosp. Bull.*, 1915, xi, 19.

The röntgen ray has taken the foremost place in the diagnosis of stasis in the alimentary tract. Stasis when due to mechanical obstruction shows an increase of the normal time for the passage of the opaque meal through the intestinal tract; retention at the point of obstruction and at the various sphincters from below upward; dilatation on the oral side of the obstruction; displacement of portions of the neighboring hollow viscus when the cause of the obstruction is adhesive bands. The conditions producing stasis not associated with mechanical obstruction are: incompetent ileocecal valve allowing a return reflex of the cæcal contents into the ileum; spasm of the ileocecal valve preventing the contents of the ileum from passing into the cæcum; sagging of the transverse colon causing sharp angulation at the splenic flexure; dilatation of the colon, either congenital or acquired; redundancy of the pelvic colon, with lengthening and atony.

In the 260 cases examined, the author found 88 instances of stasis: 73 ileal and 16 colonic. A meal should be followed through, and an enema should also be given. The opaque meal (character and quantity not stated) is seen in the duodenum after a half-hour, after four hours in the ileum and cæcum; shows a trace in the ileum after six hours, and should be out of the ileum after nine hours. The average time for the opaque meal to fill the colon is 24 hours, and normally the cæcum is clear of the bismuth meal after 48 hours, though it frequently remains in this locality from 60 to 105 hours. This delay is termed stasis.

The conclusions drawn from röntgen observations should be carefully verified and modified in certain instances by recognizing the numerous idiosyncrasies of the patients, nervous phenomena being apt to lead one astray.

ALBERT MILLER.

Pfeiffer, D. B.: Appendicular Obliteration. *Ann. Surg.*, Phila., 1915, lxi, 438.

From an analysis of 100 cases of obliterative chronic appendicitis operated upon by Deaver, the author comes to the following conclusions:

Appendicular sclerosis and its terminal stage, appendicular obliteration, differ pathologically and clinically from chronic active appendicitis. In the latter there is either a persistent low-grade infection, or recurring attacks separated by intervals of latency. In the former there is no active or latent inflammatory process present, merely the end-results of such a process.

With appendicular obliteration, three types of symptoms are to be considered: (1) reflex, due to irritation of the nervous mechanism of the appendix, the "dyspeptic" type of appendix; (2) local, due to mesenteric and peritoneal contraction, and inflammatory bands or adhesions affecting the appendix, cæcum, ileum, or ascending colon; (3) consecutive symptoms, general and local, consequent upon disturbed function of the ileocecal region.

Simple appendectomy avails for reflex symptoms, but in local and consecutive symptoms only insofar as the operation permanently frees symptom-producing contractions, sclerosis, or adhesions.

The determination of these latter conditions and the appropriate treatment therefore awaits further observation and experience.

I. GERBER.

Beach, W. M.: The Extraperitoneal Operation in Stricture of the Sigmoid Colon. *Penn. M. J.*, 1915, xviii, 611.

To remove growths of the pelvic colon by the extraperitoneal method and thereby reduce the high mortality attendant upon immediate anastomosis is the plea of the author. Accessible records show that immediate end-to-end or lateral unions are followed by more than 50 per cent mortality; hence it is certainly desirable that some procedure, even though not so brilliant in technique, be evoked that will enable the surgeon to extirpate the disease successfully, with a much reduced mortality.

The following case is reported: The patient, aged 42, complained of obstinate constipation for two years. During the last six months he had passed bloody stools frequently and had so much bladder irritation that he had been taking treatment for it for a year. Palpation revealed a movable mass to the left of the median line in the hypogastrium and extending into the left iliac region. Sigmoidoscopy verified a large scirrhus ulcer in the lower loop of the pelvic colon. At operation a tumor was found involving the entire circuit of the pelvic colon four inches above the rectosigmoid junction, adherent to the posterior wall of the bladder. Upon separating the tumor from the bladder the latter was ruptured, and later was sutured. The tumor, an adenocarcinoma, was disposed of by the three-step, extraperitoneal operation. Owing to the malignancy, the third step has been postponed indefinitely. The patient has regular stools daily, partly *a via natura*. His bladder symptoms have subsided, his appetite is normal, his weight has increased, and he is able to follow his occupation with a reasonable degree of comfort.

EDWARD L. CORNELL.

Coffey, R. C.: The Major Procedure First in the Two-Stage Operation for Relief of Cancer of the Rectum. *Ann. Surg., Phila.*, 1915, lxi, 446.

The author believes that the great reduction in mortality in the past three years following operations for cancer of the rectum is due to the employment of the two-stage operation. He has modified the operation so that the separation of the sigmoid and the entire intraperitoneal part of the operation is done at the first stage.

A rectal tube is passed up beyond the growth and the contents are allowed to drain during the operation. The abdomen is then opened in the median line, the sigmoid mobilized down into the pouch of Douglas, clamped, and cut by a cautery. The ends are treated with tincture of iodine, and the distal end is then inverted by means of the contained rectal tube, through which sutures have been passed. The cut mesosigmoid is then closed over with peritoneum, at which time the superior hæmorrhoidal artery and, in some of the cases, both internal iliac arteries are ligated. The proximal end is drawn through an opening in the middle of the left rectus, just below the umbilicus, where it is sutured in separate layers. The end of the sigmoid which protrudes from the anus is clamped and, 24 to 48 hours later, is cauterized external to the clamp and the clamp removed.

Coffey has performed this operation in eight cases during the past year. He found the patients apparently in the best state for the second operation, from twelve to twenty days after the first.

The second operation consists of removing the coccyx and last sacral vertebra, and very radical excision of the entire rectum and surrounding connective tissue and fat, also the sphincter. At this time the second operation produces practically no shock and may almost be said to be a minor operation. The peritoneum was not opened except in one case, and in this case the cancer extended so far up that the operation should not have been attempted. This was the only death in the eight cases operated upon by this method.

The author feels that this operation is less shocking than any other that he has tried, and that it is particularly applicable to cancers of the rectum proper, even those cases involving the sphincter. The operation of course is not applicable in cases of total obstruction. The second stage of the operation is particularly suited to either spinal or gas anæsthesia.

I. GERBER.

Morris, R. T.: The Angiotribe in Hæmorrhoids. *Internat. J. Surg.*, 1915, xxviii, 143.

The angiotribe is considered by Morris to possess special advantages in the removal of hæmorrhoids.

1. The blood-vessels and lymphatics being absolutely crushed, there is no hæmorrhage.

2. The blood-vessels are so thoroughly crushed that embolism is averted.

3. The nerves being completely crushed, a minimum of pain follows operation.

4. Other tissues are so thoroughly crushed that their residue does not invite dangerous infection.

The instrument is applied in the long axis of the rectum, and the redundant tissue clipped off. On removal, a thin membrane is left, which is not to be touched. Powder is applied and the bowels kept locked for 2 or 3 days. There may be some separation of the edges of the wound, but nothing is required beyond a drying powder.

The author has never seen a case of bladder or anal sphincter spasm follow this method, and he even uses it in prolapse of the bowel.

PHILLIPS M. CHASE.

LIVER, PANCREAS, AND SPLEEN

Graff and Weinert, A.: Why are Disturbances After Cholecystectomy Still so Common (Warum bleiben nach Exstirpation der Gallenblase so häufig Beschwerden zurück)? *Beitr. z. klin. Chir.*, 1914, xcii., Festschr. Hamburg-Eppendorf, 339.

The authors sent out question sheets to 130 patients on whom cholecystectomy had been performed for gall-stones and personally investigated and examined the great majority of those who still have disturbances. They received answers from 124 patients—109 women and 15 men. Of these, 87 have been well ever since the operation or immediately after, and have remained so to this day. Four others have had one attack after each operation (2 true colics followed by icterus) but have remained well ever since, so that a total of 91 (73.4 per cent) are cured.

The others who still have disturbances are classified into five groups:

1. Those who have symptoms pointing to the possibility of a stone being left behind (4 cases).

2. Those with disturbances of a gastro-intestinal nature (8 cases). They are caused principally by kinks of the stomach or bowel due to adhesions.

3. True adhesion disturbances (12 cases). Of these the symptoms in some of them may be due to changes in the pancreas, found at operation.

4. Disturbances due to a ventral hernia following operation.

5. General nervous disturbances having probably no connection with the gall-stone disease (6 cases).

Adhesion, therefore, is the most prominent factor in post-operative disturbances. It is therefore essential to prevent their formation as much as possible. The authors recommend the subserous enucleation of the gall-bladder and tamponade with the Dreesman glass drain as especially useful.

L. A. JUHNKE.

Dietrich, H. A.: Acute Pancreatitis (Pancreatitis acuta). *Beitr. z. klin. Chir.*, 1914, xcii., Festschr. Hamburg-Eppendorf, 322.

In Kümmel's clinic 17 cases of acute pancreatitis have occurred within the last five years, one of traumatic origin. In the etiology of non-traumatic pancreatitis gall-stone disease is important, either

due to infection or to the action of ferment. Pre-disposing factors are diabetes, alcoholism, arteriosclerosis, and adiposity. The disease always appears suddenly and usually with pain in the region of the stomach, vomiting, and sensitiveness in the region of the pancreas. The clinical picture later becomes confused and resembles that of diffuse peritonitis or ileus. Temperature as a rule is not present; the pulse is small and rapid. The pancreatic reaction of Cammidge is not reliable.

The treatment consists in early laparotomy in the midline, irrigation with normal salt solution, exposure of the pancreas through the ligamentum gastrocolicum, incision of the capsule, and drainage. In the presence of gall-stones, cholecystectomy or cholecystostomy is done, if the condition permits. Stimulants are used, especially normal saline infusion. In 16 cases a cloudy hæmorrhagic exudate was found in the abdomen at operation, fat necrosis in the omentum and mesentery in nearly every case. The pancreas was usually infiltrated, containing hæmorrhagic areas, and in three cases there was extensive necrosis and destruction of tissue. Another characteristic point is that the subcutaneous fat is converted into a firm layer resembling bacon fat.

A mortality of 77 per cent occurred — unusually high, but undoubtedly due to the fact that over half of the cases were received in the most severe stages of collapse.

L. A. JUENKE.

Dowd, C. N.: Cavernous Angioma of the Spleen.

Tr. Am. Surg. Ass., Rochester, Minn., 1915, June.

Angiomata of the spleen are very uncommon — some of them have ruptured and have been reported as blood cysts, others have undergone such changes as to be classified under carcomata. A tabulation of 13 cases of cavernous angioma is given. In six of these cases other organs beside the spleen were involved in the growth, especially the liver. The author reports one case, a woman of 37, who for 6 months had noticed a splenic tumor which had extended into the epigastrium across the median line. Splenectomy was done, and at the operation angiomatous spots were noticed in the liver. The patient recovered from the splenectomy but 13 days later suffered from liver hæmorrhage similar to that which had occurred in the spleen. The liver enlarged greatly and the patient died 6 weeks later.

Pictures of the enlarged spleen with its blood cyst were shown, also microphotographs of the cavernous angioma which had replaced practically all of the splenic tissue. The histogenesis of the growth was discussed; it was supposed to be of embryonic origin.

Upcott, H.: Splenic Jaundice: a Contribution to the Surgery of the Spleen. *Brit. J. Surg.*, 1915, ii, 673.

The author gives a good short description of this condition with report of a successful case. According to his definition it is an affection whose features

are chronic jaundice, anæmia, enlarged spleen, and an excess of urobilin in the urine and fæces. It is a jaundice which may commence in childhood, occasionally with a history of it in the family, which does not tend to produce either pruritus or bradycardia.

The blood shows a lowered hæmoglobin content. The serum is bile-tinged, and the red cells are diminished. Polychromatophilia, granular degeneration of red cells, is occasionally present. There is occasional leucocytosis in contrast to splenic anæmia and there may be a relative lymphocytosis. There is an increased fragility of the red cells, shown by diminished resistance to the hæmolizing effect of a weak saline solution.

The spleen may be just palpable or may extend to the iliac fossa, and as a rule is not tender. At operation there are usually few evidences of perisplenitis. The fæces are normal in color, no bile pigment is present in the urine, but the urobilin content is increased. The urobilin output in the stools may rise from 0.15 gram to 4 grams per diem.

The patients complain of weakness, languor, loss of appetite, nausea, headache, and epigastric pain, but rarely of pain in the region of the spleen and left scapula.

Periodical exacerbations are liable to occur with rise in temperature and increase in pain and tenderness. There is a tendency to cholelithiasis.

The two types are familial and acquired. The familial is the more common and the symptoms are milder in this type.

Physiologically the bile is formed by the phagocytes of the spleen and liver taking up the dead or dying red cells; the hæmoglobin thus liberated is absorbed by the hepatic cells, its iron split off, and the resulting bilirubin excreted into the bile capillaries.

Adami regards jaundice as a regurgitation of bile pigment into the blood and lymph-vessels from a surplus in the liver. Excessive hæmolysis gives hæmoglobinuria.

In experimental obstructive jaundice the terminal bile capillaries are dilated; this is not the case in the hæmolytic icterus produced by injection of toluylenediamine.

The source of the bile pigment in the blood is from the spleen.

Through an increased hæmolysis the spleen produces bilirubin or an intermediate body in excess; the increase is beyond the power of the hepatic cells to dispose of, and a marked jaundice with choluria results. "If the hæmolysis is long continued and gradual in onset, the liver-cells have time to adapt themselves to the extra amount of bilirubin, or its intermediate precursor, brought them from the spleen, and are able to excrete the greater part of it into the intestine, thus leading to an increase in urobilin. A variable but small amount of bilirubin passes the liver-cells and reaching the general circulation produces a moderate icterus, but is not sufficient to lead to choluria."

He suggests that the "threshold value" of the kidneys is so raised that bile will not be excreted until cholæmia has reached a greater degree than usual, and this may explain the mechanism of splenic, or acholic, jaundice.

Arguing from the above facts, it may be inferred that the disease is due to an excessive destruction of red blood corpuscles, and physiological data point to the spleen as the seat of the hæmolytic overactivity.

It may be suggested that the increased fragility of the red cells is due to some substance produced in excess by the spleen which renders the red cells an easy prey to the splenic pulp. The fragility of the red cells has been noted to disappear after splenectomy.

Splenectomized dogs show increased resistance of the red cells and a lessened tendency to hæmolytic jaundice after the injection of hæmolytic serum.

The spleen is generally much enlarged and shows evidences of perisplenitis with a diffuse fibrosis of the splenic tissue.

Gibson has described a streptothricial invasion and he suggests that infection by an extraneous organism must be excluded before attributing the condition to perverted metabolism of the splenic cells.

After splenectomy the icterus usually fades in a few days, with slight leucocytosis for a few days, followed by gradual recovery from the anæmia.

The disease is not progressive and operation need be advised only when the patient complains of its symptoms.

The author's case was that of a young woman 35 years of age, who had suffered from jaundice since childhood. Eleven years previous, after an operation for gall-stones, she was troubled with biliary fistula for ten months. She was troubled with headache, poor appetite, and loss of weight; she often felt chilly and at times had rises in temperature.

The author operated for calculus in the common duct and did an anastomosis of the gall-bladder and duodenum, following which the patient was free from jaundice for three weeks, but it returned when she was able to be up.

When seen one year later she was moderately jaundiced, at times a deep orange, had attacks of shivering, nausea, and pain in the epigastrium along the left costal margin to the left shoulder. The fæces were always colored, but the urine was dark brown; tests for bile pigment were negative. The spleen was palpable one inch below the costal margin and tender.

Inquiry revealed the fact that her father had died from an operation for gall-stones, after suffering from jaundice for ten years. One sister was suffering from an enlarged spleen and anæmia.

Eight months later the patient's condition was unchanged. Wassermann test negative. Through an error, the results of fæces and urine examinations, red and white blood-cell counts were not obtained.

The differential count was normal. The fragility test showed hæmolysis to 0.5 per cent saline solution.

At this time the spleen was removed. There were a few adhesions at the junction of the phrenic and renal surfaces. The patient went home on the thirteenth day. The jaundice was markedly less on the fifth day, and gone on the sixth. Seven days after operation, red blood-cells, 4,475,000; white blood-cells, 11,100; 3 per cent eosinophiles. Fragility test: hæmolysis with 0.5 per cent saline; normal control 0.45 per cent. The fæces contained no excess of urobilin. Two months after operation she had a hæmatemesis, and epigastric pain after food for several weeks. Three months after operation she was moderately anæmic but clear of jaundice. She had a dragging pain in the left side after walking; leucocytosis of 12,440; fragility of red cells the same as at the last examination.

Gibson's pathological report on the spleen was as follows:

Macroscopical. The organ was enlarged to about three times the adult size and presented a normal shape. The surface was smooth with slight thickenings where the trabeculæ met the surface. Some old localized perisplenitis was seen on the concave surface, and there was some recent perisplenitis along the anterior border. The color was dark red. On cross-section the organ was firm and fleshy; the malpighian corpuscles could be recognized embedded in a red matrix. On careful examination of a number of cut surfaces there could be seen here and there buff-colored pinhead areas, usually in or touching a trabecula. They did not occupy more than a millimeter of the length of the trabecula.

Microscopical. There was a diffuse fibrosis and the trabeculæ were thickened. The pigmented spots seen by the naked eye showed a diffuse black staining with Wheal and Chown's stains, and some irregular, curved, and angular thick threads only partially stained black. There were clear unstained bands interrupting the threads, short forms, and bacilli present. There was much yellow pigment here and elsewhere. In two of the sections, a black irregular network was present under the capsule in places which showed a buff-pigmented spot to the naked eye.

On histological grounds, there was an undoubted invasion of the organ by a filamentous organism of the streptothrix type. Cultures have been made, and from them have been obtained pure growths of an organism which belongs to the streptothrices.

Studies of the reactions and pathogenicity of this organism are not yet complete. DONALD GORDON.

Wilson, L. B.: Pathology of Spleens Removed for Certain Abnormal Conditions of the Blood.
Tr. Am. Surg. Ass., Rochester, Minn., 1915, June.

This study is a continuation of a previous report which covered the pathologic examination of 26 spleens removed at operation or autopsy in the Mayo Clinic between November 14, 1905, and

November 1, 1912, from patients on whom a more or less positive diagnosis of splenic anæmia had been made, and of two "wandering spleens" removed at operation within the same period.

The present preliminary report covers the examination of 31 more spleens removed at operations between December 3, 1912, and June 9, 1915. Further study of several groups will be reported later. The cases have been studied clinically by Giffin, whose grouping is observed in the abstracts of the pathologic protocols given.

Pathologic analyses of 15 cases of clinically diagnosed splenic anæmia are given. The average age of the patients at the time of operation was 36 years. The average duration of symptoms was 32 months. The average weight of the spleen was 1,130 grams. This is a little higher than the average weight (975 grams) of the spleens reported in 1913. The average of the two groups is 1,045 grams. Few of the specimens equal the weights given by Lyon, who states that the average weight is 62 ounces (1,860 grams). This discrepancy is probably due to the fact that Lyon's figures are drawn largely from autopsy reports, while those of the Mayo Clinic are from operative material, the spleen continuing to enlarge until death. In general the change in the shape of the spleen is not so marked as the change in size. In other words, the hypertrophy is evenly diffuse except in those cases in which infarcts have occurred. The maintenance of the notch is important from the standpoint of clinical diagnosis.

Histologically, the most constant features are the marked reduction of the pulp and lymphoid tissue with the great increase of reticulum and the almost constant presence of amyloid degeneration and arteriosclerosis. Whether the diffuse hypertrophic fibrosis is the result of inflammatory changes has not been accurately determined. The author sees no reason at present, however, to change from the commonly accepted theory that the process is one of low-grade chronic inflammation. In this connection it may be noted that Bunting has isolated a diphtheroid organism in pure culture in 4 out of 12 tubes sown from the spleen in one of their cases.

Analyses of the pathologic findings in 7 spleens from cases of pernicious anæmia are given. The average age of these patients was 44 years at the time of operation. The average duration of symptoms was 27 months. The average weight of the spleens removed was 463 grams. Only one was less than normal (195 grams). The increase in weight is out of harmony with the conception of the atrophy usually found in the spleen in cases of pernicious anæmia. Here again the discrepancy is probably accounted for by the fact that in the last stages of pernicious anæmia the spleen becomes atrophic, while the author's figures, based on operative cases, show an increased weight of the organ.

Cytologically the increase is mostly in the lymphoid tissue, though it is worthy of note that in

one case there was a well-marked fibrosis, the weight of this spleen being almost twice the average weight of the glands in the series. The almost entire absence of pigments in these relatively early stage cases is again in contradiction to the usually accepted statement that the spleen in pernicious anæmia cases is pigmented.

The remaining 10 spleens are from cases scattered in seven different clinical groups. The one case of hæmolytic anæmia, two of lues, and two of hæmolytic jaundice resemble pathologically the cases of splenic anæmia. The one case of secondary infection, one of lymphosarcoma, one of acute febrile non-septic (?) splenomegaly, and one of splenomegaly with eosinophilia have little pathologic relationship to either splenic or pernicious anæmia. The lymphosarcoma case was a typical lymphoma whose malignancy was shown clinically. The other three cases gave the general picture of an intense acute or subacute infection causing hypertrophy and hyperplasia of all the parenchymal elements of the spleen without material increase in the reticulum.

Our knowledge of the pathology of splenomegaly associated with chronic changes in the blood has made slow progress largely because, except in rare instances, we have been unable to study spleens from such cases until the later or terminal stages of the diseases have been reached. Now that splenectomies are becoming more common, it is fair to assume that clinicians will be on the lookout for large spleens in all cases of pathologic conditions of the blood and we may hope for an opportunity to study early pathologic changes in the glands removed at operation. If any progress is to be made, however, we must sharply differentiate the relative changes in the various histologic elements of the spleen and these changes must be studied in correlation with accurately observed clinical phenomena. At present the clinical diagnoses of splenic anæmia, pernicious anæmia, secondary infectious anæmia, hæmolytic jaundice, Gaucher's disease, etc., are all lacking in clearness, a condition which must be materially improved upon before an instructive parallel may be shown, if, indeed, any exists, between the several clinical syndromes in their various stages and the pathologic picture present in the spleen.

MISCELLANEOUS

Willis, A. M.: The Management of Septic Conditions in the Abdominal Cavity. *N. Y. M. J.*, 1915, ci, 1117.

The question as to when to operate in certain forms of peritonitis is still an open one. In the majority of cases Nature if left to her own resources tends to localize the infection. After this has occurred and the patient has developed a certain degree of immunity, operation can be performed with comparative safety. The author believes in the "watchful waiting" policy advocated by Ochsner. Limitation of peristalsis is essential to successful

localization of the infection, and this is accomplished by absolute bowel and body rest and the administration of morphine. Saline proctoclysis and hypodermoclysis aid by reducing thirst and by diluting the toxins. Cessation of pain and contraction of the pupils are the best indications of the effect of morphine. Glucose added to saline proctoclysis helps to maintain the nutrition of the patient and prevents the appearance of dangerous derivatives of oxybutyric acid in the urine, otherwise met with during starvation.

The use of cathartics in constipation associated with pain is distinctly dangerous. Vomiting before or after operation calls for gastric lavage.

Appendicitis cases are operated upon within the first forty-eight hours of attack, if possible; otherwise localization is waited for and if an abscess forms it is drained. The appendix is removed at

a subsequent operation—usually after about 3 months. Cholecystitis and salpingitis cases are operated upon only after the acute stage has subsided. Stomach or intestinal perforation, due to any cause whatsoever, calls for immediate operation, unless the patient is moribund.

The Fowler posture is indicated exclusively in septic conditions in the pelvis. To insure proper drainage, the patient should be placed on the affected side, and once or twice daily should be turned on the abdomen to allow the pus to gravitate toward the drainage opening. The drain should always reach the most dependent part of the abscess.

Solid food is withheld for a week or ten days after operation; food should be given frequently, but in small quantities. Small enemata are used, but cathartics are withheld for at least a week after operation.

LESTER TUHOLSKE.

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS. CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Burk, W.: Treatment for Infected Injuries of the Soft Parts (Die Behandlung infizierter Weichteilwunden). *Med. Klin.*, Berl., 1915, xi, 325.

Every gunshot wound, even if not primarily infected, involves the danger of secondary infection; therefore it should be kept in the best possible physical and mechanical condition for the avoidance of infection. The most absolute possible quiet of the injured limb should be maintained, if necessary, by means of splints or plaster. The life of the patient sometimes depends on this if there are signs of phlegmon. The limb should be kept elevated to avoid venous stasis. If the injury is on the lower limb the patient should be kept in bed; otherwise there is danger of lymphangitis, thrombophlebitis, or possibly pyogenic infection. For the sake of mobility of the joints, as soon as inflammation has subsided active and passive movements should be begun. If the healing takes weeks or months the position of the limb should be changed on dressing, and hot air, massage, and medico-mechanical treatment be given the joints.

If ankylosis of the joint must be counted on—which occurs chiefly in cases complicated by fracture—the greatest care should be exercised to place the joint in the most favorable position possible; for instance, the knee in complete extension, the elbow at a right angle. Of course incisions must be made at the most dependent point for the discharge of wound secretion, and in case of phlegmon of tendon sheaths the central end of the diseased area is laid bare. Foreign bodies must be removed as far as possible without too much injury to the tissues; probing and opening of blood and lymph-vessels must be avoided as far as possible. Wounds should not be irrigated with antiseptic fluids; paint-

ing with tincture of iodine is preferable. Pockets may be irrigated with hydrogen peroxide. When abscesses have been opened they may be washed out with carbolic acid, which is neutralized after one-half to one minute with alcohol.

In the course of severe phlegmons there are often copious hæmorrhages due to a hæmorrhagic diathesis; the granulations bleed like a sponge, though no bleeding vessels can be found. In such cases subcutaneous or intravenous injection of 5 ccm. human blood serum is effective. If the bleeding is from a vessel it must be ligated some distance above the injury, or there is apt to be recurrent bleeding from erosion. General septic infection may often be avoided by amputation at just the proper time.

The author has not found Bier's hyperæmia very effective. In gas phlegmon there is a characteristic brownish red discoloration of the skin with crepitation from the gas collected under the skin. This is best treated by numerous small incisions, abundant use of hydrogen peroxide, and intramuscular insufflation of oxygen. In gas gangrene the only possible treatment is amputation well into the sound tissue; in spite of it the mortality is fearfully high.

A. Goss

Pfender, C. A.: The Röntgen Ray a Diagnostic Factor in Myositis Ossificans Circumscripta. *Wash. M. Ann.*, 1915, xiv, 146.

The term "myositis ossificans circumscripta" has been proposed for local bone formation to differentiate it from "myositis ossificans progressiva." The present paper is based to a great extent on the monograph by Herman Küttner.

Myositis ossificans circumscripta may be (1) traumatic; (2) non-traumatic; (3) neurotic.

The traumatic type may be due to chronic or occupational traumatism, repeated severe traumatism, and single severe traumatism.

Five cases of sharp traumatism have been reported. It also occurs after dislocations, notably in the brachialis anticus.

Non-traumatic cases are rare; only 12 cases have been reported. Usually they are in the thigh and upper arm.

In the neurotic cases the condition is found associated with spina bifida, tabes dorsalis, syringomyelia, transverse myelitis, paralytic dementia, and others. Ossification of the musculature of the joints predominates. The psoas is involved quite frequently in these cases and those of non-traumatic origin.

The first two types occur in early life, the third in later life.

In non-traumatic cases symptoms may be absent. In neurotic forms the nervous symptoms overshadow all else. In the traumatic form there is usually a history of muscle rupture or contusion, accompanied by hæmatoma, and local pain. This may subside or disappear, to reappear, usually in a less degree, as bone formation occurs. If nerves or blood-vessels are pressed upon the pain may be quite severe. The ossification may be quite rapid.

In the X-ray the shadow varies with the development of the growth. At first it is hazy, resembling new callus, gradually becomes denser and then linear, the lines running in the same direction as the muscle fibers. Lighter areas are present which may be cysts. When complete ossification has occurred the process may remain stationary or introgress. The X-ray may not show any connection with the skeleton.

In the differential diagnosis progressive myositis ossificans, muscle syphilis, periosteal sarcoma, cartilaginous exostoses, floating cartilage, chronic inflammatory bone diseases may be excluded on their history, their development, duration, and by the X-ray.

The growth may react its maximum in a relatively short time, and may remain so for many years, or it may tend to undergo absorption. Connection with the skeletal bone makes the prognosis more favorable. The tendency to spontaneous recovery is quite pronounced. Treatment may be prophylactic, conservative, and surgical.

The important point in prophylaxis is to prevent traumatism in reducing dislocation—especially to the brachialis anticus muscle.

Conservative measures in the development of bone are of use, such as rest, elevation of the extremity, hydrotherapeusis, compresses, etc. Massage is contra-indicated. Moderate motion should be allowed.

Operative treatment is not advisable unless to relieve pain, or for pressure. When used the excision should be complete.

The author reports a case in which there was extensive bone formation following an injury to the deltoid. Under conservative treatment this had greatly diminished at the end of a year, and was progressing toward a spontaneous recovery.

ARCHER O'REILLY.

George, W. S., and Todd, A. H.: Myeloid Sarcoma of the Femur, with Pathological Fracture.
Brit. M. J., 1915, i, 592.

The authors report a case of endosteal sarcoma occurring some three months after a fall on the knee. A pathological fracture was sustained later while stepping down from a moderate height. The roentgenograms showed a clear, well-defined cavity in the internal condyle of the femur, which was somewhat expanded, and also a fracture of the internal condyle which had almost escaped notice. Examination of the specimen after amputation showed a cyst in the internal condyle filled with blood and lined with a dark, soft membrane showing the typical changes of a spindle-cell sarcoma. From the standpoint of diagnosis the authors attribute much importance to a persistence of localized tenderness over the internal condyle. F. J. GAENSLEN.

Davis, J. S.: The Celluloid Tube in Finger Injuries.
J. Am. M. Ass., 1915, lxiv, 1647.

Davis divides partial traumatic amputations into two classes, clean cuts or crushing off, with much bruising of remaining parts. When the bone is exposed, it may be shortened to make a pad over its end, but in certain skilled workmen, as much of the terminal phalanx as possible must be saved. He thought some means to do this could be devised, and the first thing that occurred was transplantation of tissue. This would demand more supervision than possible in an out-patient department where most of the injuries must be treated. To stimulate growth of granulation tissue on the end of the stump, he hit upon 1/200 inch transparent sheet celluloid.

A summary is given of 15 cases with varying degrees of injury, from a little to all of the first phalanx; not one has a painful stump, and all have a movable pad over the end of the bone. The injury is painted with tincture of iodine. The celluloid, soaked in 1:1000 bichloride, is washed with ether or alcohol, then wrapped around the finger and fastened with adhesive strips. This makes a tube a little smaller at the free end than at the base. The granulations are all thus made to grow past the end of the bone. Cleaning and dressing is done through the end of the tube. In early cases, a blood-clot is allowed to form, and serves to aid granulations. Lacerated parts are gathered together inside the tube. Only a very small gauze dressing is needed around the tube. The wound can be watched through the celluloid, which should be removed every two or three days, since the skin becomes moist from sweat. It does not stick to the surfaces. The sooner the case is seen after the accident the better the chance of recovery. The healing takes about 33 days. C. A. STONE.

Brickner, W. M.: Shoulder Disability; a Further Study of Its Varieties and Their Treatment.
Interst. M. J., 1915, xxii, 331.

The author lists the causes of shoulder disability as follows: (1) subacromial bursitis; (2) subacro-

mial bursitis with injury to the supraspinatus or, occasionally, the infraspinatus tendon, and calcareous deposit; (3) spinatus tendon injury with slight or perhaps no associated bursitis; (4) fracture of the greater tuberosity of the humerus; (5) subluxation (forward) of the humerus; (6) spontaneously reduced dislocation; with which, of course, may be grouped disability following surgically reduced dislocation; (7) sprain or tear of the capsule without dislocation; (8) subcoracoid bursitis; (9) biceps tendovaginitis; (10) traumatic periostitis; (11) developing syphilis, tuberculosis, and neoplasm of the head of the humerus; (12) true brachial neuritis; (13) unclassifiable cases, most of which probably belong to one or another of the above groups but some of which perhaps remain to be accounted for otherwise.

1, 2, and 3. The first three conditions are considered together. The author regards as the most nearly characteristic combination of signs and symptoms—pain in the upper arm extending toward the elbow and at some time or other in the shoulder region itself, as on abduction or internal rotation; marked tenderness over the lesser tuberosity of the humerus and more or less limitation of abduction and of internal rotation. This limitation is usually due to spasm, but not infrequently is mechanical. A röntgenogram may show lime deposit. Open operation is advised in acute cases, while in chronic cases much can be accomplished by the author's abduction treatment.

4. Fracture of the greater tuberosity of the humerus, when due to external violence, may be recognized by local pain, tenderness, swelling, and ecchymosis. When resulting from internal violence the symptoms are similar to subacromial bursitis, and a positive diagnosis is made only by a röntgenogram. The treatment consists either of the abduction method in bed or fixation of the arm in moderate abduction.

5. Subluxation of the humerus, traumatic in origin, shows no pathology in the röntgenograph. There is pain in the shoulder radiating down the arm and inability to abduct; a slight prominence of the head of the humerus, but no apparent flattening of the deltoid muscle. Continued abduction for ten to fourteen days effects a cure.

6. After the spontaneous or deliberate reduction of a dislocation, disability is to be overcome by abduction treatment, passive movements, and massage.

7. Sprains and lesser tears of the capsule are diagnosed in old cases chiefly by exclusion. The condition is best treated by abduction.

8. Subcoracoid bursitis is not a common affection. There is distinct tenderness below and to the outer side of the coracoid process; also pain on abduction and forward movement of the arm as in pulling on an overcoat sleeve. Iodine, asperine, and resting the arm in a sling effect a cure.

9. Biceps tendovaginitis is manifested by tenderness in the bicipital groove, pain on strongly

flexing the supinated forearm, and pain when the arm is swung back and forth, the head of the humerus then gliding under the biceps tendon. Treatment is by local rest and anodynes.

10. Traumatic periostitis, unless acute, can be recognized in the röntgenograph.

11. Syphilis, tuberculosis, and new-growths of the head of the humerus in their early stages may present only the features of a stiff and painful shoulder. Röntgenography is the most valuable diagnostic aid in differentiating between these conditions.

12. Brachial neuritis is rare. Shoulder disability of other types is often mistaken for neuritis, especially when there is atrophy of the deltoid and spinatus and radiation of the pain toward, or into, the hand.

13. The unclassified cases are those presenting the general picture of shoulder disability in which neither physical signs nor röntgenography point definitely to any of the lesions above considered. They respond admirably to abduction treatment.

Brickner's abduction treatment consists in placing the patient in bed in a semirecumbent position, supported on pillows, not too soft. The patient then abducts the affected arm on the pillow as far as he can comfortably. A muslin bandage is then looped lightly about the wrist or elbow and carried to a convenient spot on the headpiece of the bed, where it is fastened. The upper end of the bed is then raised on "chock blocks" or chairs. As the patient's body little by little slides down in bed, his arm travels (relatively) further and further up, and thus a shoulder that obstinately resists forcible efforts at abduction yields steadily, painlessly, to this gradual countertraction which the patient often does not even feel. The author states that it is striking to observe that a person whose shoulder for months has not been abducted, actively or passively, beyond 45°, put thus to bed in the afternoon, may be found the next morning with his arm alongside his head. Few cases respond so quickly, however. The treatment may require a week or even more to restore full abduction.

CHARLES M. JACOBS.

Löffelmann: Shoulder Pain—Referred Phrenic Nerve Symptom—in Acute Surgical Diseases of the Abdomen (Der Schulterschmerz—das Fernsymptom des N. phrenicus—bei den akuten chirurgischen Erkrankungen der Bauchhöhle). *Beitr. z. klin. Chir.*, 1914, xcii, Festschr. Hamburg-Eppendorf, 225.

The author investigated all acute abdominal cases in Kimmel's clinic in regard to referred shoulder pain. The typical shoulder pain occurs in the nape of the neck, in the supraclavicular region, and in the upper arm, far from the focal disease. It may appear simultaneously with, before, or after the onset of the abdominal pain. According to Mackenzie it is referred along the sympathetic from the phrenic nerve to the cervical nerves. The

cause of the phrenic nerve irritation may be mechanical, chemical, or inflammatory, in general a combination of the several factors. The severity of the shoulder pain depends upon the intensity of the phrenic irritation, upon the rapidity and duration of the irritation, and upon the susceptibility of the individual. The appearance of the shoulder pain in acute abdominal conditions is due to an irritation of the diaphragm, the side on which the pain appears usually corresponding to the side in which the lesion exists. The symptom, however, does not appear in every case of irritation, therefore there must be other factors which enter into its production.

In 16 cases of perforation of the stomach and duodenum, only once did the symptom fail to appear (adhesions between diaphragm and liver). It is of importance in the differential diagnosis of appendicitis, as it occurs in this disease only if the appendix is situated near the diaphragm. It was also absent in 3 cases of acute pancreatic disease. Only in 2 cases of ruptured pyosalpinx was the symptom present and in both, the right subphrenic space was filled with pus. Liver abscess at the convexity produces the symptom early; likewise perinephritic abscesses if they reach the diaphragm. In ruptured tubal pregnancy the symptom appeared on the right side in each of 6 cases. In 2 cases of injuries to the spleen and 1 to the liver, the symptom occurred on the left side twice and on the right side once.

The author believes that referred shoulder pain is frequently a valuable diagnostic aid.

L. A. JUHNKE.

Heineck, A. P.: Contribution to Study of Joint-Bodies. *Chicago M. Recorder*, 1915, xxxvii, 216.

The author states that he has reviewed all cases of joint-bodies originally reported in English, French, and German literature between 1890 and 1913 found at the Crerar Library. The age of greatest incidence is in the third decade. Males are affected much more frequently than females, the proportion being 9 to 1. Of 303 cases the knee was affected in 250, the elbow in 41. Trauma was noted in the history in 218 cases. The bodies owed their origin either to detachment of portions of bone or cartilage, to organization of blood-clot following injury, to pedunculated lipomata, to free or pedunculated fibromata, to enchondromata or to osteomata. Hypertrophied synovial fringes occurring after injury may also produce joint-bodies.

The symptoms are referable first to the injury responsible for the formation of the joint-body in the traumatic cases, and second to those produced by the joint-body itself. Symptoms vary greatly from slight discomfort to severe functional disturbance. The X-ray is often of value in distinguishing between free bodies and displaced semilunar cartilage, as the latter do not show in the X-ray plate. For the removal of bodies from the knee-joint situated posteriorly, the posterior incision

should be used. Post-operative fixation combined with traction is advised for knee cases. Operation is the only treatment to be considered, as secondary joint changes will otherwise occur with increased impairment of function.

The X-ray findings are not always conclusive, depending upon the amount of lime salts contained in the joint-body. Joint-bodies invariably impair the structure and function of a joint. Intra-articular manipulation at operation should be reduced to a minimum.

F. J. GAENSLER.

Porter, J. L.: The Treatment of Rheumatoid Arthritis of the Hypertrophic Type (Osteo-Arthritis). *Am. J. Orth. Surg.*, 1915, xii, 718.

The author states that the promiscuous removal of various organs, thereby attempting to lessen the toxæmia, has in some cases been effective in curing the condition, but it is not effective in all cases.

He considers that any sensitive joint should have rest. The hypertrophic condition responds poorly to any treatment, but with an intra-articular injection of 2 per cent formalin in sterile olive oil, filling the joint to moderate capacity and immobilizing for two to eight weeks, good functional results are obtained.

He gives one-quarter grain of morphine with atropine five minutes before the injection and infiltrates the point of puncture with novocaine. Little pain is experienced. A general anæsthesia is necessary only for very nervous patients.

H. W. MALTBY.

McGavin, L.: Tuberculosis of the Right Knee-Joint. *Clin. J.*, 1915, xlv, 161.

The author gives an interesting case report of tuberculosis of the knee and discusses the case at length, going into the anatomy, etiology, clinical findings, and treatment.

Ruling out other conditions and condemning palliative measures as useless in this case which has become extra-articular, he recommends excision and, failing in this, amputation can always be done. Spinal anæsthesia is given absolute precedence and the use of a broad Esmarch tourniquet advised.

Extensive removal of diseased tissue and swabbing with pure carbolic or lysol, securing an angle of 175° to 178°, and preservation of the greater length of the internal condyle are advised. If the patella is involved it should be removed and in any case its articular cartilage removed. The tourniquet is left on until a firm dressing has been applied according to the Howse method. W. H. MEYERDING.

FRACTURES AND DISLOCATIONS

Coues, W. R.: The Diagnosis and Treatment of Some Rare Fractures. *Boston M. & S. J.*, 1915, clxxii, 705.

Coues emphasizes the necessity of careful study of all injuries in order that slight or unusual fractures may be discovered and properly treated.

¶ He first discusses fractures in the upper extremity: (1) fracture of the trochlea of the humerus, (2) subperiosteal Colles' fracture in children, (3) separation of the epiphysis of the first metacarpal bone, (4) fracture of the carpal cuneiform bone. Those of the lower extremity he classifies: (1) fracture of the fifth metatarsal bone as differentiated from the occurrence of the bone of Vesalius, (2) separation of the lower epiphysis of the fibula, (3) fracture of the middle and external cuneiform.

All these fractures are difficult of diagnosis, but the author believes the diagnosis can be made by careful physical examination even before the X-ray is taken.

F. C. KIDNER

Trawick, J. D., and Keith, D. Y.: The Medicolegal Aspect of Radiograms in Diagnosis and Treatment of Fractures and Joint Injuries. *Lancet-Clin.*, 1915, cxliii, 489.

Trawick and Keith discuss the relation of X-ray to other findings in fractures and joint injuries. The radiogram conveys the "fact of injury," but cannot give a satisfactory impression as to the effect of injury upon function. They say we are often misled by the X-ray in the direction of attempting to obtain results that give a good X-ray picture without a proper regard to resulting function.

They advocate the universal use of X-ray in fractures, but emphasize that the sources of error and possibilities of misjudgment of the findings of the radiogram must be kept in mind.

The possibility of errors resulting from faulty X-ray technique are discussed in detail.

The treatment of any case must rest upon the surgeon's ability to properly interpret the plate and the clinical findings. The X-ray enables us primarily to recognize the fracture and, second, to classify our fractures into groups for methods of treatment much more accurately than formerly.

Court decisions are quoted to illustrate the legal status of the X-ray in certain injury cases. In one case, for example, the skiagraph was admitted as evidence that a certain patient had a bullet in his body, but it was not admitted that the pictures might show which of two courses the bullet might have taken.

In a second case the court admitted X-ray pictures to give the jury a more intelligent idea of the injury than could have been conveyed by description.

In another case X-ray plates of a fracture of the neck of the femur were admitted as evidence simply to illustrate or make clear the testimony of experts.

The authors conclude that whether for judge or jury, the X-ray photograph of a bone or joint lesion is evidence simply of an actual condition, and only the expert is capable of drawing conclusions as to the meaning of such a condition and to interpret the probable effect of such a lesion upon the possessor. Before the jury a radiogram is purely secondary evidence, a mere representation of a condition existing, and from that radiogram alone no judge or jury can draw conclusions as to the probable results on ultimate function.

H. WINNETT ORR.

Neuhof, H., and Wolf, H. F.: The End-Results of Treatment of One Hundred Cases of Fracture of the Elbow; Immobilization in Hyperflexion Combined with Early Passive Movements and Massage. *Surg., Gynec. & Obst.*, 1915, xx, 295.

Cases sent from different surgical departments of a large out-patient clinic were studied to determine results of various methods of treatment for fracture of the elbow. No selection of material was made, those in which the final outcome could be determined being taken in succession to the number of one hundred. Results were classified very simply into "perfect" and "imperfect," the former consisting in the full and normal range of motion.

With this rigid standard "perfect" results vary from 23 to 81 per cent in different statistics. Of the authors' one hundred cases the results were "perfect" in 53. Their statistics demonstrate clearly that the outlook for perfect results depends, not upon the type of fracture to any great extent, but upon how soon massage and mobilization are begun. If the elbow is fixed in hyperflexion and mobilization and massage are instituted early, perfect results may be expected almost invariably—they were found in 22 of the authors' 23 cases. Early physical therapy is also important from an economic standpoint; the sooner it is begun the shorter the duration of the treatment and the loss of function of the elbow. Six of the patients in the authors' series were operated upon; none yielded perfect results. Such excellent results have been observed, even in very difficult cases, by combining hyperflexion with early mobilization that the authors are exceedingly conservative in their indications for operation.

The rationale and technique of hyperflexion are discussed in detail. Any flexion short of hyperflexion does not abolish the lever action of the forearm or the distorting influence of muscular action.

Additional reasons for fixation in hyperflexion are: (1) The triceps acts as a natural splint around the lower end of the humerus. (2) The carrying angle is maintained perfectly because the elbow is fixed with the forearm and arm in alignment. (3) If limitation of motion does follow fracture, the elbow is in the most favorable position.

There are two important objections to immobilization in extension: (1) The slightest lateral movement may rotate the broken fragment from the correct position. (2) Tendency to backward displacement existing in most elbow fractures is in no way prevented.

In the technique of hyperflexion the authors lay especial stress upon minimal manipulations in examining and setting the fracture. They are strongly opposed to those who believe that crepitus, etc., must be elicited in order to make the examination complete. It is not always possible to entirely reduce the fracture, yet the results of hyperflexion may be perfect. Hyperflexion means the most acute flexion possible without obliteration of the

radial pulse; the sooner after fracture it is carried out, the better the result. A simple roller bandage is described; it securely fixes the elbow in the hyperflexed posture.

The object of massage and mobilization is the prevention of joint stiffness, whether from muscle atrophy, changes in the joint capsule, or mechanical interference of bone fragments. The authors found that the two objections to this treatment — danger of displacing fragments and of formation of excessive callus — are eliminated by scrupulous observance of one principle; i.e., massage and mobilization must be painless. This is especially important in children. Massage may be begun very soon after fracture, but an absolute rule for the commencement of mobilization cannot be made. The X-ray picture and freedom from pain in the first attempts are the best guides. The authors term mobilization "early" if begun within two weeks. Treatments are given daily, the elbow being returned to hyperflexion after each treatment. It is rarely necessary to maintain hyperflexion for more than three weeks. The authors conclude with a detailed description of their cases.

Wyeth, J. A.: Fracture of the Patella; an Original Method of Retaining the Fragments in Apposition. *J. Am. M. Ass.*, 1915, lxiv, 1752.

Wyeth describes a simple method, which has been successful, for holding in apposition the fragments of a fractured patella. The edges of the fragments are exposed by a transverse incision over the center of the separation and the clot washed out with hot salt solution. The edges of the overhanging connective tissue are stitched with a continuous fine linen suture and the skin incision closed with running chromicized gut.

The holding device is as follows: A strong, quarter-curved needle (Hagedorn), threaded with extra large linen (No. 5), is carried across the lower border of the lower fragment, dipping deep into the substance of the patella ligament just along its expanded attachment to the patella. The joint of entrance and exit of this needle should be about 1.25 inches apart, and the thread ends left 8 inches long.

This same procedure is carried out along the upper edge of the upper fragment, the needle not going into the bursa under the madricep muscle. The transverse incision is then covered with gauze and the ends of the sutures tied tightly together, holding the fragments in good apposition. A cast is then applied, which is to be worn for six weeks; walking on crutches being allowed at the end of a week. At the end of six weeks the threads are removed. There is no danger from ankylosis, and the results from the operation have been good.

J. W. SEVER.

Hauke: Treatment of Fractures of the Patella (Zur Behandlung der Patellarfrakturen). *Beitr. z. klin. Chir.*, 1915, xcv, 548.

Until within the past year and a half Hauke treated cases of fracture of the patella in which

operation was indicated by suturing with wire. He gave up this method because the operation was so frequently followed by arthritic changes in the joint. Among 15 cases, 4 were treated conservatively with 3 good results and one poor; the latter case had been earnestly advised to have an operation but refused. There were no signs of arthritis in any of these 4 cases. Of the 11 cases operated upon 6 healed with good function; there was bony union in only one however, fibrous in the rest, with an average separation of the fragments of 1.5 cm. In 4 cases the results were moderately good and in one poor. Of the 15 patients, 4 were awarded permanent damages. In 8 of the 11 cases there was more or less pronounced arthritis after the operation, which caused subjective symptoms, sometimes permanent, sometimes only on change of weather.

Since he has given up wire suture he follows the method recommended by Thiem, Lauenstein, and others. The joint capsule is sutured, and also the auxiliary extensor apparatus, that is, the periosteum and peripatellar ligaments. In old cases and also in recent cases with wide separation of the fragments a plastic operation is added; a flap is formed of quadriceps fascia, with its base attached to the upper fragment, it is then brought over and attached to the lower fragment. He thinks it is not necessary to attain bony union, as good functional results are often obtained when there is only fibrous union. Four cases have been operated upon by the new method with good results in 3 and moderately good in one. There have been no signs of arthritis in any case.

A. Goss.

Riedl, H.: Fracture-Dislocation of the Upper Tibia Without Injury to the Fibula — a Typical Injury (Verrenkungsbruch des oberen Schienbeins mit Erhaltung des Wadenbeins — eine typische Verletzung). *Zentralbl. f. Chir.*, 1915, No. 3, 33.

Riedl discusses this type of fracture first reported by him several years ago and adds four more cases to the ones reported. The fracture is really a fracture-dislocation of the knee-joint; fracture of the upper joint surface of the tibia longitudinally, the outer condyle of the femur being driven between the split condyles of the tibia without injury to the fibula.

The injury in each case was due to a fall upon an abducted, extended limb. Apparently two forces are necessary in the production of the injury, one a compressing force in the axis of the limb, and a second acting from without inward as manifested by the weight of the body being thrown outward over the limb.

External examination reveals swelling of the knee extending downward for a distance on the tibia, a definite protrusion on the outer side below the joint, slight flexion and more or less valgus position of the leg; there is usually fixation in the position, but some lateral motion is permitted. The radiograph shows the tibia split between and

separating the two condyles, the fracture extending downward for several inches. The condyles are separated so far that one or both may even be entirely broken off. The separation is due to the fact that the external femoral condyle is driven between the two more or less into the epiphysis of the tibia. In all cases the outer condyle of the tibia is displaced without, however, having lost its connection with the fibula. The patella is likewise dislocated outward to the same extent. In all cases several small pieces of bone are also found in the neighborhood of the joint.

The treatment consists in applying extension, and after the muscle spasm has been overcome reduction may be done. Anæsthesia is to be employed. Traction applied to the limit and slight flexion with lateral pressure to return the fragments to their places is the method of reduction. Occasionally, however, the outer condyle, supported by the fibula, cannot be returned to its normal place and must be replaced by the open method. It is important to retain the fibula, and care must be exercised in the reduction so as not to fracture it. The author believes that since he has seen four such fractures in the last six years, they are not at all uncommon and undoubtedly have been classified among other fractures. He hopes that he has stimulated interest so that the surgical entity may be separated from the others.

L. A. JUHNKE.

Derge, H. F.: The Pathology of Repair of Fracture of Bone, with Especial Reference to the Pathology of Delayed and Non-Union. *Wis. M. J.*, 1915, xiii, 468.

Derge presents in a convincing way his views regarding methods of treatment in fractures and his reasons (including histopathology) for those views.

He says that a simple fracture heals by the development of bone in the blood-clot between and around the broken ends of the bones. This clot, especially near the medulla of the bone, is first converted into granulation tissue, then connective tissue takes the place of the latter. Meanwhile the osteogenetic cells of the medulla along the blood-vessels in the haversian canals in the compact bone and in the subperiosteum form three layers of callus. By the third or fourth week bone formation has occurred. Osteoclasts clear up the debris and round off the edges, and with the completion of this osteoporosis the union of the bone is practically complete.

Derge dismisses the controversy over the osteogenetic functions of various tissues by saying that periosteum is osteogenetic or not according to whether or not it carries with it, when removed, some of the underlying osteoblasts.

The importance of accurate approximation and perfect immobilization are emphasized. Circulation must not be impaired. Infection is always a serious detriment.

In comminuted fractures the small pieces must be left in place and may all play a part in repair.

Various influences are spoken of which may arrest the process of repair and cause non-union, such as interposed soft tissue, cystic blood-clot which will not organize, infection, etc.

With regard to the bone splint Derge says: "The assertion that transplanted bone is simply osteoconductive has not passed unchallenged"; and also, "Again, just what would happen if these transplants were . . . devitalized by boiling is purely a matter of conjecture." (As a matter of fact, exactly this experiment has recently been performed and it was found that fresh bone with periosteum, and a piece of the same bone which had been boiled, when transplanted together, behaved in exactly the same way.)

He emphasizes the necessity for exact external splinting, even when metal or bone plates are used. If plating and splinting are perfect the screws will hold and a recovery is obtained with a minimum of callus formation. The plate may be removed or not.

H. WINNETT ORR.

Page, C. M.: Aluminum Skeleton Splints in the Treatment of Compound Fractures. *Brit. M. J.*, 1915, i, 839.

The author tells of the ease with which splints of all standard sorts can be made from aluminum bars and shaped as wanted because of the malleability of aluminum. He uses simple skeletons of aluminum with slings and loops holding the extremity in position. Extension is easily obtained by jointing the aluminum bars.

F. C. KIDNER.

Smith, J. F.: Open Treatment for Fractures. *Wis. M. J.*, 1915, xiii, 475.

The use of the X-ray permits of a more accurate diagnosis, facilitates a more exact reduction, and enables the patient to judge more accurately the results of treatments.

The work of Lane and of others who have followed him has given a strong stimulus to the open treatment of fractures. Unfortunately, a number of men whose technique is faulty have followed this method, and consequently the results have all been unsatisfactory. Where the technique is faultless, the results on the whole have been most satisfactory.

The advantages of the open treatment are that it makes possible more accurate apposition, facilitates the removal of interposed muscle, fascia strips, etc., the repair of injured nerves, or removing them from danger, and the securing and ligating of blood-vessels.

A serious disadvantage is the danger of compounding a simple fracture, and the liability of sepsis, which may easily result unless the technique is as careful as, or more so than, that employed in abdominal surgery. Callus formation is less after the use of interval splints, and non-union is a more frequent result.

Numerous methods of internal fixation have been

suggested: plates, clamps, silver wire, etc. None is better than the plate and all have their place in special cases. The one that does the required work with the least amount of foreign material is the best. As a number of these splints must be removed later, it is best to use the one which is most easily removed. All internal splints should be covered by fat or muscle. The operation is simple when done a week or ten days after the fracture. Later the results may be less certain.

In ununited fractures bone transplants give the best results. In recent compound fractures the fragments may be held by silver wire. The wires may be held by shallow grooves and should be placed to prevent overriding. This method does not introduce septic material into the medullary canal, and the wires can be easily removed.

In infected fractures the sepsis should be cleaned up before coaptation is attempted.

In fractures of the patella and olecranon open treatment is best. The most satisfactory method is a circular suture. Fractures near the joint offer the most favorable conditions for plating. In fractures of the neck of the humerus or femur, nails or screws give good results.

In general, then, open methods of treating fractures are most suitable in cases in which good results cannot be secured by the ordinary methods. Each case must be judged upon its own merits. Above all, the essential to success is faultless technique. The X-ray should be constantly used in checking results.

ARCHER O'REILLY.

Bauer, A.: Treatment of Fractures of the Shaft and Neck of the Femur with Ambulatory Plaster Casts (Behandlung von Oberschenkel- und Schenkelhalsbrüchen mit Geh-Gipsverbänden). *Beitr. z. klin. Chir.*, 1915, xcv, 544.

Ambulatory plaster casts are to be preferred in many cases to extension treatment, as they do not keep the patient in bed for weeks. The essential feature of Bauer's improved cast is a knee-band fitting over the condyles of the femur like a horse collar. It is provided with handles which extend out through the plaster, by means of which strong traction can be exercised directly on the lower fragment, on the same principle as it is in nail extension. As the pressure of the band is only on the condyles there can be no injury of the vessels and nerves in the popliteal space. Straps pass upward from the knee-band and come out above the hip. In addition to making it possible to exercise traction directly on the lower fragment, this arrangement allows of the application of the cast in semiflexion, which is the surest way in fractures of the femur to attain accurate coaptation of the fragments. After hardening of the cast the band, which has been oiled to facilitate easy removal, may be drawn out through an opening left for that purpose the space filled in with gauze by means of dressing forceps, and the opening closed with gauze.

A. Goss.

SURGERY OF THE BONES, JOINTS, ETC.

Schultze, F.: Treatment of Ischæmic Contracture (Zur Behandlung der ischämischen Kontraktur). *Verhandl. d. deutsch. orthop. Gesellsch.*, 1915, xxxv, 52.

The proper treatment for ischæmic contracture is early operation. Shortening of the bones of the forearm, an operation that has been much in favor, is illogical; the abnormality is in the muscle, which should, therefore, be operated upon. The operation of choice is transverse section of the flexor muscles. The fingers should be overextended and the ends of the severed muscles united with a tube of fascia lata. The dead space which is always produced should be filled in by the implantation of fat. Two cases of successful operation by this method are described.

A. Goss.

Schanz, A.: Mobilization of Ankylosed Joints (Beiträge zur Mobilisation ankylotischer Gelenke). *Verhandl. d. deutsch. orthop. Gesellsch.*, 1915, xxxv, 25.

Schanz describes his operation for mobilizing ankylosed joints, the essential feature of which is the interposition of a pediculated flap of subcutaneous fatty tissue between the new-formed joint surfaces. Details of the operation are described for the elbow, knee, and hip joints, and successful cases are demonstrated. The joint is kept in plaster for periods varying from three or four weeks for the elbow to eight weeks for the hip. No mechanical after-treatment is necessary—in fact it is even harmful.

A. Goss.

Breton, P. le: A Simple Method for Forcible Traction on the Leg While Applying Plaster Casts. *Am. J. Orth. Surg.*, 1915, xii, 722.

The apparatus is designed to supply the necessary traction and keep the foot in proper position while the cast is being applied, when assistants are scarce. The ordinary sacral rest with padded perineal extension for counterpressure may be attached to any table or Bradford frame; then two ordinary lawn tennis reels are attached to the foot of the frame to receive the tractor straps.

The foot is gripped with two pieces of webbing sewed in T-shape, two extra pieces 3 inches long with a buckle attached being sewed on 3 inches from the base of the T. The base of the T is placed over the tendo achillis and the ends pass in front of the ankle and buckle on opposite sides. The base is the tractor strap, which is attached to the reels. The ankle being well padded, no difficulty is experienced in removing the tractor after the cast is put on. The apparatus gives a steady traction with the legs in the proper position.

H. W. MALBY.

Finochietto, R.: Usefulness of Ventral Decubitus in Some Leg Amputations. *Ann. Surg., Phila.*, 1915, lxi, 616.

Finochietto claims that in amputations of the upper two-thirds of the leg the patient should be placed in ventral decubitus. Examinations and

dressings can also be done to advantage in this position. All classes of anæsthetics can be administered and are well borne in this position. Inspection and any desired type of amputation can be carried out with the greatest ease by changing the angle of flexion of the knee.

FRANK D. DICKSON

Albee, F. H.: Bone Transplantation (Meine Verwendung der Knochentransplantation). *Verhandl. d. deutsch. orthop. Gesellsch.*, 1915, XXXV, 112.

Albee reports 253 cases in which he has used bone transplantation during the past three years, including 178 cases of Pott's disease, 16 of congenital club-foot, 17 of unhealed fractures of the long bones, 14 of paralytic deformities of the foot, and a few operations for other conditions, such as replacing the neck and head of the femur in an old case of osteomyelitis, correcting paralytic deformities of the hands, correcting a poorly developed jaw, mobilizing a tuberculous knee-joint, covering the defect in the spina bifida, in paralytic and congenital luxation of the hip, in paralytic scoliosis, in saddle nose, in tubercular sacro-iliac joint, in congenital absence of the tibia, to fill in the gap in the bone after removal of osteosarcoma, and to mobilize ankylosed hip and wrist-joints by transplantation of cartilage.

In the operation for tubercular spondylitis he splits the spinous processes of the vertebræ involved, so as to form a groove in which to insert the transplanted bone. The details of the operation are described. The patient is kept in bed for six to eight weeks. The operation relieves pain and other symptoms and prevents the deformity from growing worse, but it corrects the existing deformity only in early cases in which the kyphosis is still movable.

In unhealed fractures operations involving the use of Lane's plates or other foreign material involve the danger of infection, and the foreign body retards bone repair. Living bone on the other hand hastens formation of new bone. Albee uses an inlay graft, that is, a groove is sawed in the fragments, a fragment is sawed from the tibia of exactly the right size to fit into this groove, and inserted into it. In this way periosteum is applied to periosteum, endosteum to endosteum, and marrow to marrow, so that normal relations are restored.

In club-foot the Achilles tendon is cut, and an incision made in the scaphoid, so that it is divided into an anterior and a posterior half. The position of the foot is overcorrected, and a wedge of bone from the tibia fitted into the opening in the scaphoid. The wedge is sutured in place with kangaroo tendon, the foot placed in plaster in an overcorrected position with the knee flexed for four weeks, and then for four more weeks in a plaster cast to the knee.

In more than 100 cases Albee has had 100 per cent good results. The periosteum, endosteum, and marrow must always be transplanted, as they are the active agents in producing new bone. In many cases a more rapid and complete union between the

transplant and the original bone can be secured by applying many small bone splinters at the site of fracture. These unite with each other and the transplant and aid in the development of bone. The bone transplant is quite resistant to infection; in two animal experiments in which infection occurred a part of the transplant became necrotic and was discharged, but a part of it took. The transplant takes within four weeks if the connection with the original bone is good. The inlay transplant and the wedge transplant are valuable aids in the correction of bone deformities.

A. Goss.

Stoffel, A.: My Method of Tendon Transplantation (Über meine Methode der Sehnenüberpflanzung). *Verhandl. d. deutsch. orthop. Gesellsch.*, 1915, XXXV, 227.

Stoffel points out the necessity of accurate knowledge of the anatomy and physiology of muscles and tendons if tendon transplantation is to be successful. No two muscles are alike in length or thickness of muscle-fiber, nor in their content of elastic fibers. Every muscle with its tendon forms a unit that cannot be completely replaced by any other. The problem is to select the tendon of the muscle that most nearly corresponds to the injured one, and this can be done only if the operator possesses a thorough knowledge of the morphology of all the muscles under consideration.

Physiologists speak of the "tonus" of the muscle, as if the muscle were normally always under a certain degree of tension. As a matter of fact under anæsthesia the contractile fibers of the muscles are absolutely flaccid; there is no tension. The tendon to be transplanted must be chosen so that its muscle in its new position can maintain exactly its normal physiological length, and is not placed under tension. If this is done the transplanted muscle functions normally as soon as the plaster is removed, without any after-treatment. The tendon can be transplanted with the limb in any position if only the necessary length of the transplanted muscle for that position is determined beforehand.

The transplanted tendon should be fixed at the natural insertion of the paralyzed muscle. Every muscle with its tendon forms a unit and should be transplanted intact to get the best functional results. If the muscle is transplanted in such a way that the tendon of one muscle is attached to the body of another muscle two structures are united that differ anatomically and physiologically, so that the best results cannot be obtained. Shortening the diseased muscle is an entirely illogical procedure and should never be done. Another erroneous method is to attempt to make joint ligaments from tendons. The tendon is a cylindrical structure, the joint ligament a broad, flat one; moreover the tendon is much poorer in elastic fibers than the ligament, and therefore cannot perform its functions.

An essential feature of Stoffel's operation is the electrical examination of the muscle during the operation.

A. Goss.

ORTHOPEDICS IN GENERAL

Davis, G. G.: *Study of Orthopedic Surgery. Therap. Gaz.*, 1915, xxxix, 305.

The word "orthopedic" is derived from two Greek roots, "*orthos*," meaning "straight," and "*pais*," meaning "child," not from the Latin root "*pes*," meaning "foot." The specialty of orthopedic surgery deals with deformities in all parts of the body. It is a branch of general surgery, but differs from it in that it is more conservative, seeking to restore disabled parts to usefulness rather than amputating or excising them. It differs further in that operation is in most cases only an incident in the cure. A surgeon has no moral right to operate on an orthopedic case and then turn it adrift as cured. The work requires the cultivation of an "orthopedic mind" and an infinite amount of patience in order that the case shall be followed up and treatment continued until a cure is effected. The specialty is wide and is regarded as a final resort where cripples of all varieties, whether congenital or resulting from accident or disease, can be restored to usefulness.

The line of demarcation between the specialty and general surgery is not well defined; orthopedic cases are quite frequently met with under the care of the general surgeon, but, as the rule does not work both ways, general surgical cases are rarely seen in the orthopedic wards. In some hospitals all fractures are treated by the orthopedic service. On the whole, most bone and joint cases are treated by the orthopedists. These include a vast variety of lesions most of which are chronic. Tuberculosis of the joints constitutes a large part of the practice of orthopedic surgery. The treatment of this disease requires infinite patience and watchfulness. The paralyses form another great class of cases which the orthopedist is called upon to treat.

Poliomyelitis, the most common and best known of these, is responsible for most of the cripples seen on the streets. The treatment of these deformities requires a vast resource of mechanical skill and careful attention over a long period. Prevention is important in the early stages of this disease. It is rare that a limb is totally paralyzed, and as a result of loss of balance of muscular power the limb is pulled into deformity. This can be prevented by applying mechanical devices to keep the limb in normal position. The physician should urge parents to do all in their power to bring about improvement. He should not rob a distressed mother of hope by playing the part of a "prophet with lugubrious predictions," as one can never be certain, even after the allotted year and a half or two years, that any muscle is absolutely "dead."

Cerebrospastic paralysis or Little's disease is even a more dreadful affliction than poliomyelitis because of the added condition of mental defect. It becomes the unpleasant task of the surgeon in these cases to explain to the mother why her child does not walk and talk as other children. One

should not rashly predict the fate of such a child but should give a very guarded opinion.

Another large class of cases may be spoken of as static. As the weight of the entire body is born on the feet, it is evident that static troubles occur most frequently in the feet. The parts which serve to maintain equilibrium and bear weight are bones and ligaments rather than muscles, and it is these which yield under strain. Less frequently disturbance of balance occurs in parts higher up and is manifested by scoliosis, round shoulders, and abdominal ptosis. The treatment of these conditions requires an analytical mind.

In this paper, which was delivered as an address to medical students, the author does not seek to teach facts, neither does he make a plea for the specialty which as he says "needs no excuses" or "seeks no favors"; rather he seeks to give an idea of what orthopedic surgery is and why it demands special study.

W. A. CLARK.

Marshall, H. W.: *Importance of Vascular Condition in Orthopedic Cases. Am. J. Orth. Surg.*, 1915, xii, 725.

The author believes that the vascular condition in the presence of the gross lesion of the orthopedic case is often overlooked and he suggests that more attention be given to the vascular condition.

He believes the blood to be the common soil in which all tissues grow, and accordingly upon the condition of the blood depends the condition of the tissue as to how it shall develop or become altered and changed.

It is natural to overlook the vascular conditions because they act slowly and internal medicinal measures are so complicated in their results in comparison to mechanical or surgical measures. Certain medical measures should be used to rectify conditions, because they are simple and harmless and in no way will they alter extended examination of blood, urine, feces, lungs, etc.

The use of iron, cathartics, reducing diets, and increased elimination from circulation are all believed to be of value in pathological changes of tissue.

Several types of cases as strains, bony changes, bursitis, relaxed muscles, and joint changes are all discussed in some detail and proper medical treatment suggested.

He believes the field of general medication has been neglected and overlooked and that orthopedic and medicinal measures should go hand in hand, and as a routine tonic eliminative treatment be prescribed at the very outset.

C. C. CHATTERTON.

Parkes, W. R.: *Madelung's Deformity of the Wrist. Illinois M. J.*, 1915, xxvii, 286.

In looking into the literature on Madelung's deformity Parkes found that 67 cases had been reported up to 1909 and 17 cases during the last five years. He gives Madelung's summarization

of the condition as a form of disturbance of growth in the wrist-joint, analogous to pes valgum, genu valgum, and scoliosis. The deformity develops spontaneously, with pain and limitation of mobility of the wrist. Flexion may be increased, but extension is usually greatly restricted. Restriction of adduction and abduction is less marked. The patients generally belong to the working class, but the deformity can scarcely be called an occupational disease. It usually reaches its height in one to two years. The main factors in the formation of the deformity are, first, the action of the flexor muscles, which are more powerful than the extensors and which tend to stretch the extensor tendons and ligaments of the wrist, thus exerting a forward bowing of the radius; second, pressure of the carpus on the anterior edge of the lower extremity of the radius which causes atrophy, while release of pressure from the posterior edge permits hypertrophy of that part.

The pathology, etiology, symptoms, prognosis, and treatment are briefly discussed, and the case is reported of a girl, aged 15 years, whose wrist and forearm ached after using them; then some deformity at the wrist was noticed. This with the tenderness of the joint and pain on motion, increased. Six months from the beginning of symptoms there was limitation of motion, which gradually increased until extension of the hand on the wrist was quite impossible. Flexion was more marked than normal. The lower end of the ulna was seen to project posteriorly abnormally and there was some adduction of the hand. X-ray showed an abnormal curvature of the lower end of the first row of carpal bones. A cuneiform section of bone was removed from the radius at the point of greatest angularity, permitting the curvature to be straightened. As there was a tendency at the time of the osteotomy for the fragments to spring back into the line of the old curve, a small vanadium steel plate was applied. This served to hold the fragments in a straight line and union took place without any signs of disturbance other than tenderness over the plate. On this

account, the plate was removed six months later, having served its purpose of holding the fragments in line.

CHARLES M. JACOBS.

Matti, H.: Tendon Plastic Operation for Paralytic Club-Foot (Zur Behandlung des paralytischen Klumpfusses; neue Methoden der Sehnenplastik). *Deutsche Ztschr. f. Chir.*, 1915, cxxxiii, 99.

In the majority of cases of paralytic club-foot following poliomyelitis or other unknown causes there is paralysis of one or both peroneal muscles with various degrees of paralysis of the extensor digitorum communis longus; that is, only the extensor and pronator groups of muscles are involved. In previous methods of operation the tendons of the flexors and supinators have been used to replace these injured muscles. Matti thinks this is an incorrect procedure. He describes three forms of operation which he uses in such cases and gives illustrations, together with a discussion of the various types of cases in which each is suitable.

In the first he splits off a piece of the tendon of the peroneus longus and uses it to provide a second attachment for the tibialis anticus at the head of the fifth metatarsal bone. This does not interfere at all with the normal dorsal extension or supination of the tibialis anticus, but it compensates perfectly for the pronation defect.

His second method is to shorten the peroneus tendon or produce a substitute for the peroneus function by transplanting a lateral flap from the tibialis anticus onto the tendon of the peroneus longus in the leg.

The third method is to divide the tendon of the peroneus longus high up, draw it through a button-hole back of the head of the fifth metatarsal, and implant it onto the tendon of the tibialis anticus above the ligamentum cruciatum, after tunneling under the fascia of the dorsum of the foot. This third method is also sometimes indicated in gunshot injuries that involve the motor nerves for the peroneal muscles.

A. Goss.

SURGERY OF THE SPINAL COLUMN AND CORD

Trout, H. H.: Spina Bifida; Tibial Transplant, Father to Child. *Surg., Gynec. & Obst.*, 1915, xx, 523.

Trout reports a case in which he obtained a tibial graft from the father and employed it to close a defect in the lumbosacral region. This graft was about 4 x 6 cm. and 2 mm. in thickness, and being obtained in this shape by means of a circular saw there was no entrance into the medullary cavity of the tibia. In fact, X-ray taken two months after the removal of the graft failed to show the place from which the graft had been removed.

He does not approve of opening the sac at all further than to aspirate the fluid slowly and then close up the hole made by the aspirator by means

of ligature. In this manner danger of infection is averted and the shock incident to dissection of nerve roots is eliminated. The collapsed sac is shoved into the opening in the spinal column, a graft placed over it and sutures applied between the periosteum of the graft and the spinous and transverse processes of the child. X-rays show considerable growth of the graft after four months. The result is perfect and the child is enjoying excellent health.

The advantages of the method are the quickness and ease with which operation can be done, the elimination of the shock, the great lessening of the chances of infection, and the closure of a defect in a bony column with bone.

Cramer, K.: Operation in Spina Bifida Occulta (Über Operationsbefunde bei Spina bifida occulta). *Verhandl. d. deutsch. orthop. Gesellsch.*, 1915, xxxv, 21.

Cramer calls attention to the frequency of various deformities of the feet in cases of spina bifida occulta. He describes 9 cases upon which he operated. Two of the cases are still under observation, and there was almost complete restoration to normal of the feet in 5 of the other 7 cases. Of course the recovery was a slow process, requiring weeks or even months. He advocates a closer study of the pathological anatomy of such cases with a view to selecting those suitable for operation. In his cases there were small lipomata in the dural sac, but with the exception of one case these did not contain nerve-fibers. A. Goss.

Schede, F.: Experimental Studies in the Correction of Scoliosis (Experimentelle Studien zum Redressement der Skoliose). *Verhandl. d. deutsch. orthop. Gesellsch.*, 1915, xxxv, 319.

Schede has been using Abbott's method of treating scoliosis at the München orthopedic polyclinic since the spring of 1912. He has performed experiments with spinal columns taken from corpses of patients who had scoliosis, and also treated a series of cases comparatively, some by correction in Abbott's position with plaster applied according to Abbott's directions, others by correction in a position of lordosis with plaster applied in the same way, others by correction in an upright median position, and still others by simple extension applied to the head and pelvis without any lateral pressure.

Abbott asserted that his method simply reverses the process by which the scoliosis arises, and that therefore even rigid scolioses can be overcorrected. Schede thinks this theoretical principle is wrong and he has never been able to even completely correct a rigid scoliosis by any method of treatment. Abbott is also wrong in his assertion that his kyphotic position loosens up the rigid spinal column; on the contrary it increases the rigidity because the longitudinal tension is increased in this position. Schede experimented with the spinal columns of cadavers to find out in which position the lateral mobility of the spinal column was greatest, and found that it was greatest for all segments in the physiological position for that segment, that is, for the thoracic column in its physiological position of kyphosis, in the lumbar column in lordosis, which is its normal position. Any change or increase in the normal curve decreases the lateral mobility.

He found that in 71 per cent of the cases simple extension without any lateral pressure was better than any other method. The results obtained by methods where lateral pressure is exerted are not due to the pressure on the ribs, but to the force exerted indirectly on the spinal column, which is exercised directly in extension. For cases of movable scoliosis the median position is the best; for rigid scoliosis lordosis is preferable. Abbott's position of kyphosis is not superior in any class of cases.

Röntgen pictures are given of cases before and after treatment by the various methods.

A. Goss.

Müller, G.: My Experience with Abbott's Scoliosis Treatment (Meine Erfahrungen mit der Abbottschen Skoliosenbehandlung). *Verhandl. d. deutsch. orthop. Gesellsch.*, 1915, xxxv, 346.

Müller studied Abbott's method at the Hospital for Crippled Children in New York, and describes the technique that he uses in its application. He believes that the effect on the spinal deformity is apparent, rather than real. From the patient's appearance it might be assumed that there had been a great correction, but a röntgenogram shows that there has been little or no change in the curve. There is, however, a marked improvement in the thoracic deformity, and it is this that causes the great improvement in appearance. This improvement in the form of the thorax, in addition to its cosmetic value and the psychic effect on the patient and his family, improves the heart action and respiration. The patients have a better color, due to the increased activity of the heart and lungs. While Abbott's method does not really cure scoliosis, Müller regards it as the best method in use at present. Abbott has pointed out the right direction; it must be followed up by further work. A. Goss.

Maas, H.: Operative Treatment of Severe Scoliosis (Operative Behandlung schwerer Skoliosen). *Verhandl. d. deutsch. orthop. Gesellsch.*, 1915, xxxv, 367.

The failure of all the methods of treatment of scoliosis by corrective plaster casts is due to the fact that the rigid spinal column and deformed thorax offer too much resistance to correction. Diagrams are given showing the deviation and rotation of the thorax and the effect of this displacement on the growth of the ribs. To overcome this deformity and render the thoracic wall capable of replacement in a normal position Maas suggests resection of a segment of the ribs on the concave side. He describes two cases in which he performed this operation on children, resecting 4 to 6 cm. of the posterior part of the ribs subperiosteally. The effect on the mobility of the thorax was striking. He did not apply the plaster corset immediately after the operation, and when he did apply it 8 or 10 days later he found that the gain had been partially lost; therefore he recommends that the plaster jacket be applied at the close of the operation while the child is still under anæsthesia. This operation is best adapted for severe cases of dorsal scoliosis in young children. A. Goss.

Erlacher, P.: Albee's Operation for Spondylitis (Beiträge zur operativen Versteifung der Wirbelsäule nach Albee). *Verhandl. d. deutsch. orthop. Gesellsch.*, 1915, xxxv, 138.

Erlacher describes four cases in which he used Albee's method of bone transplantation in tubercular spondylitis. The spinous processes of the vertebrae

involved are split and a piece of bone inserted, with the object of producing rigidity of the spinal column and dispensing with the necessity of wearing a corset. In three of the cases the results were good. Pain was relieved, the patients could walk comfortably without a corset, and the gibbosity decreased somewhat. In these cases a part of the tibia was used for the splint. In the fourth case, which was a failure, the splint was made from a part of the scapula. The transplant was absorbed after a few weeks; hence Erlacher advises against the use of the scapula for this purpose. Albee's operation is indicated for the purpose of relieving symptoms, freeing the patient from the wearing of a corset, and preventing any increase of the deformity. It does not of course cure the tuberculous process; for this purpose heliotherapy is recommended. A. Goss.

Goldthwait, J. E.: A Case of Pott's Paraplegia with Complete Paralysis Lasting for Five Years; Recovery After Treatment. *Am. J. Orth. Surg.*, 1915, xii, 671.

The author reports a case of complete recovery from paraplegia of five years' duration.

The patient had had Pott's disease of the lower dorsal spine for twenty years. Had suffered twice before with paraplegia, and once a laminectomy was done. Upon three occasions she had been unable to move her limbs for five years.

The treatment was good hygiene, plaster bed in hyperextension, massage, and a light brace when she was able to get up. No operation was performed.

The author calls attention to the fact that a complete paralysis may exist and that the spinal cord may still remain viable after a considerable length of time. C. C. CHATTERTON.

Biesalski, K.: Experience with Förster's Operation in Little's Disease (Meine Erfahrungen mit der Försterschen Operation bei der Little'schen Krankheit). *Ztschr. f. orthop. Chir.*, 1915, xxxv, 57.

Biesalski has operated upon 9 cases, 3 of them four years ago, 4 two and one-half years, 1 one year, and 1 six months. The age of the children varied from five and one-half to twelve and one-half years, and in all of them the Wassermann was negative. The technique was the one usually used for the operation. In 2 cases he cut the second and fourth lumbar roots and the first sacral, in 5 the second, third, and fifth lumbar and the first sacral, in 2 the second, third, and fifth lumbar and the first and second sacral. He thinks it is not of so great importance to select the roots with great care as to resect as many as possible, so as to exclude peripheral stimulation as far as possible. With the exception of the first case, where he followed Förster's advice, he has operated in one stage, and he thinks this is absolutely indicated in children; for in them the opening of the spinal canal is comparatively easy. When the dura is reached the hardest part of the operation is accomplished. The

opening of the dura, resection of the roots, and closure of the wound do not take more than 12 or 15 minutes. He lost the case which he operated on in two stages. After the first operation there was an iodine eczema followed by superficial granulation, and he was obliged to perform the second operation while some of the granulations persisted; although these were curetted away as carefully as possible, infection took place through some small invisible remnant of granulations, and the child died of suppurative meningitis.

Histories of the 9 cases are given: 1 died; in 2 severe cases of tetraplegia with athetosis there were no results; in 1 case of tetraplegia without athetosis the legs improved greatly, while the right arm, which had been treated by other operations was worse than the left which had not been treated. One case of paraplegia with imbecility improved considerably though the after-treatment was given at home and quite imperfectly; the improvement, he thinks was greater than would have been possible with any other method. The results in 4 cases of paraplegia, 2 with and 2 without tenotomy, were satisfactory. He thinks with his present experience that the operation was not indicated in the 3 tetraplegia cases. In 5 cases, 3 without tenotomy, there was marked improvement, where no results could have been hoped for by other methods.

The operation is not indicated in cases of tetraplegia, athetosis, or epilepsy; but in pure paraplegias without chorea, athetosis, or ataxia, in which the spastic phenomena predominate over those of paralysis, the operation is of great value. It is in danger of being underestimated now, on account of the reaction from the exaggerated enthusiasm aroused by its first introduction; a thing that is apt to happen with all new methods. A. Goss.

Mauclaire, P.: Late Results of Four Cases of Operation for Injuries of the Brachial Plexus (Résultats éloignés de quatre cas d'intervention pour plaies du plexus brachial). *Bull. et mém. Soc. de chir. de Par.*, 1915, xli, 1210.

Mauclaire describes four cases of injury of the brachial plexus. The first patient was struck in the supraclavicular region by a shell. The paralysis showed that there was injury of the common radiocircumflex trunk. He performed anastomosis between this and a neighboring trunk of the plexus which resulted in progressive improvement in the paralysis. In the second case a bullet had fractured the clavicle and injured the plexus. There was complete paralysis of the arm and intense and persistent pain. Three months later he resected a callus that was compressing the plexus, with great improvement in the condition. In the third case he performed anastomosis of the radiocircumflex branch with a neighboring large nerve-trunk, with slight improvement in the condition. In the fourth case he has not been able to find any lesion of the nerve-trunks, and the paralysis persists.

RICARD, RICHE, and WALTHER cited cases similar

to those of Mauclaire in which there had been spontaneous improvement; they therefore do not advocate early operation in such cases.

Mauclaire pointed out, however, that in his first

case he had waited five months, and in the second three, and he considered that long enough. He still holds that anastomoses between the branches of the plexus may give valuable results. A. Goss.

SURGERY OF THE NERVOUS SYSTEM

Svindt, I.: Treatment of Sciatica by Continuous Extension (Behandlung af Ischias med kontinuerlig Extension). *Ugesk. f. Læger*, Kjøbenh., 1915, lxxvii, 597.

Svindt treats sciatica by means of continuous extension, such as is applied in fracture of the neck of the femur, and so far he is very well satisfied with this method of treatment which he has used in 26 of the 41 cases of sciatica that he has had occasion to treat in the past five years. The patients were freed from pain and most of them were permanently cured. Their ages were from 22 to 74 years. These results are probably due to the complete rest of the muscles. The extension applied is probably not enough to really stretch the nerve; 4 kilograms are applied at first and gradually increased to 7 or 8 kilograms. The pain generally disappears entirely when a weight of 7 kilograms is reached.

A sedative may be given the first few days if required; after that salicylates are given for a few days. In one case the sciatica recurred in about six weeks, but extension treatment was given again at home and the patient has had no further recurrence. There was recurrence in one other case several times, but the attacks have always been so mild as not to interfere with the patient's work. A. Goss.

Hohmann, G.: Stoffel's Operation in Spastic Paralysis (Weitere Erfahrungen mit der Stoffelschen Operation bei spastischen Lähmungen). *Verhandl. d. deutsch. orthop. Gesellsch.*, 1915, xxxv, 84.

Hohmann has used Stoffel's operation in cases of Little's disease in children and adults and has always had marked success. Almost all of the cases were recurrences after tenotomy. He has operated on the obturator for adduction of the hip, on the tibial for talipes equinus, and on the femoral for contracture of the rectus and sartorius.

He has also had good results in infantile cerebral hemiplegia; function was restored by operations on the tibial and median. As the operations were performed over two years ago he believes the results are permanent.

He has not had such good results in operating for contractures of the hands and feet resulting from apoplexy in adults. In the case of an apoplectic patient 43 years old there was recurrence of the contractures after two or three months, and there were also troublesome neuralgic pains in the extremities for a long time after the operation. The unsatis-

factory results in apoplexy may be partly due to the fact that there is flaccid paralysis of the antagonists of the spastic muscles; sometimes the result is spoiled by a repetition of cerebral hæmorrhages, and, moreover, these patients often do not assist in the after-treatment, which is indispensable to success in this operation. Therefore he recommends the operation for Little's disease and infantile cerebral hemiplegia, but not for apoplexy. A. Goss.

Steinthal: The Closure of Larger Nerve Gaps by Means of Tubules (Die Deckung grösserer Nervendefekte durch Tubularnaht). *Beitr. z. klin. Chir.*, 1915, xcvi, 295.

Steinthal reviews the literature of the experimental and clinical use of tubules of various sorts (decalcified bone, hardened veins or arteries, rubber and magnesium tubes) and loop sutures to facilitate the regeneration of nerves over distances of several centimeters, and recites in detail one case of his own.

In this case the gap in the ulnar nerve was too large to allow of direct approximation of the ends. The stumps were therefore drawn into a rubber drain and prevented from slipping out by means of stitches. The distance between the stumps was about one centimeter. Two months later the wound was reopened to remove the drain. It was found that there had been no regeneration of the nerve at all and the ends were still one centimeter apart. Since direct approximation was not possible, the peripheral end was loosened, lifted out of the ulnar groove, and displaced forward far enough to allow direct contact and suturing with the central stump by forced flexion of the elbow.

The author concludes that bridging by tubules or loop stitches is unsatisfactory and that implantation or direct suture by forced joint positions are more desirable methods. M. M. MATTHEIS.

Hofmeister, von: Concerning Double and Multiple Nerve Implantation (Über doppelte und mehrfache Nervenpflanzung bei Schussverletzungen der Nerven). *Beitr. z. klin. Chir.*, 1915, xcvi, 329.

After a general discussion of the number of cases of wounding of peripheral nerves seen in the present war, the similarity of shot direction, and the complications with vessel injuries and scar formations, Hofmeister introduces his description of nerve implanting by strongly recommending the injecting of all nerve-sheaths, whether to be operated or merely exposed during the operation, with novo-

caine-suprarenin solution ($\frac{1}{2}$ per cent novocaine solution plus 1 drop suprarenin solution to each 10 ccm.). He claims diagnostic, prophylactic, and curative virtues for this procedure.

It is obvious, he says, that the most desirable material for bridging the defect in nerves would be one which is to the greatest possible extent independent of the size of the defect and the nature of the soft parts of the wounded area, and which would permit uninterrupted healing and easy penetration of the new fibers. His method — for which he claims originality — is a step in this direction, inasmuch as he utilizes as a bridge for whole nerves other nerve-trunks, and for separate broken fibers their own or another trunk. It is true that nerve implantation has been done before, but in those cases only the peripheral stump was implanted in a parallel trunk and the central stump was ignored. In this way the peripheral area involved was supplied from a foreign center and not from its own. The double implantation, on the contrary, utilizes the parallel nerve merely as a splint and guide for the regeneration of the fibers of the severed nerve.

In addition to the difficulty which frequently attends the use of a foreign center to activate a peripheral nerve, it occasionally happens that the method of single implantation of the peripheral stump injures the recipient nerve, since some of its fibers must be cut more or less transversely and completely severed to make a suitable bed for the stump, while for the double implantation only longitudinal separation of the fibers of the bridge nerve is required. In fact, it is not even necessary to have an absolutely healthy nerve as bridging material. A nerve that has suffered somewhat from pressure may be utilized or even a severed nerve whose stumps have been implanted in another nerve, thus making possible the correction of several defective nerves in one wound area — so-called multiple implantation. In like manner, in nerves which are not completely severed, the broken bundles may be implanted in the parent trunk, or if it is not wide or strong enough, they may be implanted in a neighboring trunk.

The technique used is as follows:

1. All scar tissue must be carefully dissected out and all defective portions of the injured nerves cut off. Great care must be exercised not to lose any of the peripheral portions of the branches passing off from the trunk to various muscles. These must be carefully preserved for later implantation.

2. It is of the utmost importance that all of the nerve which has been altered by scar formation be removed. Palpate the stump backward from the point of injury, making frequent small transverse incisions, until healthy nerve structure is encountered.

3. After the necessary resections have been made, the places for implantation must be selected. No rules can be laid down for this. The operator must have the anatomy of the part sufficiently in mind to select a parallel trunk of similar function and on it

suitable points for the implanting of the stumps without producing tension. The severed ends may, of course, be freely dissected out and carried around or even through intervening structures. Points should be selected as far as possible from the wound to avoid inclusion in the scar.

4. A longitudinal incision is made in the bridge nerve, the length varying according to the thickness of the nerve to be implanted, and the fibers separated bluntly as much as may be necessary. The stump is then embedded in the incision by means of fine catgut sutures lying tangent to its sheath and the edges of the incision. The embedding process is assisted by means of forceps. Additional stitches may be made through the sheaths to hold the stump in place. The stumps should be so implanted that their cut ends point in the direction in which regeneration is expected to take place, as peripheral stumps pointing centrally and central stumps peripherally. The sheath of the nerve is then stitched in such a manner that it does not crowd the implanted stump. The implantation is not difficult unless the stump is thicker than the bridge. In such a case there is also a certain risk of injury to the recipient nerve. Two or three hours may be required for such an operation.

5. Great care must be exercised not to injure the bridge nerve in any way. It must be handled and exposed only to such an extent as is absolutely necessary.

6. There should be at hand at every nerve operation a small aseptic electrode. It is very useful for examining the injured nerve during operation. It is also used to establish the identity of the bridge nerve without unnecessary dissection. The author uses a bipolar electrode with a very short distance between the platinum points which uses the very weakest faradic current. The current is controlled by a healthy nerve or muscle in the field of operation.

7. After completion of the sutures, all the nerve-trunks concerned are injected with the novocaine-suprarenin solution.

8. The wound over the site of implantation is to be completely closed. The area of the excised scar tissue may be drained or packed as may be necessary, since as a rule the site of implantation is sufficiently far away to avoid danger from this source.

Practical work with this method will show that it is particularly applicable in cases in which other methods of correcting nerve defects are extremely difficult or even impossible.

Twenty-four cases are described in detail, with a diagrammatic illustration of the procedure carried out in each case.

One of the cases may be described as an illustration of the practical application of the method.

The patient was shot on the seventh of August, 1914. The bullet crashed through the rear of the automobile in which he was riding, shattered the metal rim, and passed through under the patient's right arm, causing considerable hæmorrhage. Care-

ful examination at the hospital showed a grazed wound of the right thoracic wall, four wounds of the inner side of the arm, absence of the radial pulse, and complete absence of function of the ulnar and median nerves. Healing of the wounds was uneventful, except for the discharge of a few small metal splinters.

On November 19, 1914, operation was performed, consisting in laborious excision of the extremely deep indurated scars. After complete dissection of the area, it was found that the ulnar, medianus, and cutaneous antebrachii, also the blood-vessels, were completely embedded in the upper scar. A little farther down was an aneurismal varix fed by the peripheral stump of the brachial artery. This was extirpated. About two inches above the elbow a large metal splinter was removed. This had caused a second severing of the medianus, leaving after resection a defect twelve centimeters long. The defect in the ulnar was ten centimeters long. The radial was used to bridge the gap in the ulnar. To make this more convenient, the median head of

the triceps was loosened for a short distance from the posterior surface of the humerus. The lower end of the ulnar was drawn through a small incision in the inner head of the triceps. The upper stump of the median was then planted into the upper portion of the ulnar, the lower stump into the lower portion of the ulnar, and the stumps of the cutaneous in like manner on the portions of the median.

The following morning the function of the radialis was normal. Twenty-eight days after operation the motor function of the ulnar had returned, and two weeks later that of the median was restored. The first of February the strength of the flexors of the hand was markedly improved and a little motion was obtained in the flexor profundus digitorum. The first of March active pronation against slight resistance was possible. In the latter half of March there was slight motility of the palmar side of the second, third, and fourth fingers and of the palm; ulnar conductivity complete, median not yet.

M. M. MATTHIES.

SURGERY OF THE SKIN, FASCIA, AND APPENDAGES

Riedel: Furuncle Metastasis (Erfahrungen über Furunkel-metastasen). *Deutsche med. Wchnschr.*, 1915, Nos. 4 and 5, 94.

Furuncles and panaritii endanger life either by involving veins or by the formation of abscesses near the site of primary trouble or far distant from it. The furuncles situated in the face or at the anterior side of the neck are the most dangerous, as the abundance of veins in these regions frequently leads to thrombophlebitis. The thrombophlebitis of the facial veins leads to early death under alarming symptoms, whereas the metastases do not develop for weeks or months, so that frequently the doubt arises whether the abscess had anything to do with the primary disease. It is surprising that furuncles, in contradistinction to the smallest skin injury, so rarely lead to lymphangitis.

The author observed 54 cases of metastases arising principally from furuncles, only a few from carbuncles, and 12 of these were fatal. He describes a few characteristic cases and summarizes his conclusions. Even the smallest furuncle is dangerous. More people die of furuncle metastases than of advancing purulent thrombophlebitis. Young people below 25 show involvement of the bones more frequently than those above that age. On the other hand, metastases in the soft parts of older people cause as much trouble as the bone metastases of the young. Metastases in the soft parts are frequent in the brain, muscles, and especially in the perinephritic tissue, occasionally also in the kidneys. The superficial lying furuncle may be treated conservatively by taking off the upper skin layer and applying an ointment dressing. If the infiltration increases rapidly and is painful,

a cross incision may be made. The deeper lying furuncles should be incised immediately. Carbuncles should be excised *in toto*.

L. A. JUHNKE.

Schüle: The Treatment of Furunculosis (Die Furunkelbehandlung). *Deutsche med. Wchnschr.*, 1914, No. 48, 2006.

Schüle incises every furuncle within the first 48 hours by burning out the center of it after anesthetizing it with 2 per cent novocaine. To prevent the formation of others he advises cleaning the skin with green soap, rubbing it with alcohol, painting suspicious areas with tincture of iodine, and the early burning out of new foci of infection. The removal of hair in the neighborhood is indicated.

L. A. JUHNKE.

Freeman, L.: The Prevention of Keloids in Scars. *Ann. Surg.*, Phila., 1915, lxi, 605.

Fascia lata is abundant and easily obtained. It may be removed from the thigh in narrow strips or in large areas with or without closure of the resulting gap in the fascia, there being little danger of injury to the function of the extremity.

The hypertrophy in keloid seems to be due mainly to tension upon the scar, hence it is seen in connection with longitudinal incision rather than with cross incisions.

Reasoning from this standpoint, the author conceived the idea of using a slice of fascia lata on a very prominent scar on a young woman's neck. The scar extended from the mastoid to the center of the clavicle and was as wide and thick as one's thumb.

A strip of fascia lata, as long as the scar tissue

and as broad as one's finger, was procured from the thigh. After thoroughly extirpating the scar and undermining the edges of the wound, the strip was spread lengthwise beneath the incision. It was then fastened to the undersurface of the skin and fascia on one side and to the deeper tissue on the other with a few sutures of catgut, thus permitting the union above it of the integument and cervical fascia without danger of displacement. Posterior to the scar was another one, and this was also hypertrophied and red. It was likewise excised, but was not underlined with fascia, although the deep fascia was carefully sutured.

At the end of twelve months, when the attempt is made to incline the head to the opposite side, the movement is checked by the strip of fascia lata. This does not inconvenience the patient and results are good.

A. H. DUNN.

Dyas, F. G.: The Open Treatment of Infected Wounds; Preliminary Report. *J. Am. M. Ass.*, 1915, lxiv, 1829.

The destruction of tissue by moist gangrene is greater than that caused by dry gangrene. Heat and moisture are necessary for the growth and propagation of practically all pathogenic bacteria. Dessication attenuates most bacteria. The treatment of burns has been greatly facilitated by the open treatment. Acting on these fundamental

truths, patients with infected wounds were treated by simple exposure to the air, protecting the wound by sterilized wire screening appropriately bent and held in place by adhesive plaster. In a large number of cases so treated, the discharge rapidly diminished and the process of repair was materially accelerated. In the process of dessication frequently large crusts, or plaques, of inspissated serum, pus, and epithelial and connective tissue elements were shed, leaving a clean, granulating surface. The surrounding parts partook simultaneously of the general improvement. In some cases, dessication was hastened by playing a current of air from a small electric fan upon a suppurating area at frequent intervals during the day. This appeared to cause the secretions to diminish more rapidly than the simple exposure to the air.

The results justified the conclusion that treating suppurating areas by voluminous dressings fosters the development of pathogenic organisms and does not assist in the repair of the tissue. It is of advantage always, when possible, to convert a moist into a dry type of gangrene. This is done by the dessicating influence of the atmospheric air. The method is safe, economical, and in keeping with Nature's own processes, as observed in the lower animals. The period of convalescence is shortened, and the danger of contamination from the atmospheric air is negligible. The addition of sunlight is a valuable asset.

MISCELLANEOUS

CLINICAL ENTITIES — TUMORS, ULCERS, ABSCESES, ETC.

Mayo, W. J.: The Cancer Problem. *Tr. Minn. St. M. Soc.*, St. Paul, 1914, Oct.

Why has the public become so confirmed in the belief that cancer is incurable and how has this pessimism been fostered? One unfortunate result of the inquiry into the influence of heredity on the causation of cancer has been the encouragement of a belief that cancer is hereditary and therefore carries a stigma with it. The person who has been successfully operated on for cancer conceals the nature of his malady with the same solicitude he would probably show in concealing the fact that he had "done time" in a penitentiary. Of the hundreds of patients who have had cancer and who have been cured by operative means the public knows little or nothing, while those who have had cancer and been operated on without success are known to all. There is no evidence that would lead to the belief that cancer is hereditary. This is equally true of "cancer houses" and "cancer towns." Small towns in older settled countries have more cancer than new towns; they have more people of a cancer-age; the younger people have left for new fields.

A good diagnostician will seldom mistake syphilis for cancer. Yet the liability to this mistake has

been dwelt upon and greatly magnified, and many individuals have advanced from the curable to the incurable stage while an effort was being made through antispecific treatment to eliminate the possibility. The Wassermann reaction has fortunately come to our aid and to the patient's rescue.

Mistakes in diagnosis from lack of careful examination is the most common cause of failure to recognize malignant disease in time for a curable operation. A too high percentage of patients with cancer are subjected to inefficient operation by inexperienced men. Because the disease is early it appears as though it might be easily cured and men who would not think of operating where a radical operation was to be done, will often perform a small operation — futile, hopeless.

The surgeon has had a great share in creating the feeling of hopelessness which exists among the laity and discouraging the general practitioners by attempts at radical operation in plainly incurable disease or extensive palliative operations which fail to palliate.

Radio-active substances have a field of usefulness in superficial growths and inoperable disease, but these agents should not be used in early growths curable by operation. The embryonic cell, such as the cancer-cell, has less vitality than the normal cell and is injuriously affected by heat. The Percy

method of using heat raised to such a degree as to coagulate the embryonic cells by a slow cooking process is a distinct advance.

Great benefit in diagnosis before operation has come from the radiograph and at the operating table by means of the frozen section. The first enables us to know in a large percentage of cases what we are going to find and the latter gives the microscopic diagnosis while the operation is in progress.

The prophylaxis of cancer is exceedingly important. Let us say to the public: "Go to your physician at once on the discovery of any sign or symptom of irritation about warts, moles, and benign tumors, or ulcerations, chronic inflammatory processes, or injuries however slight which fail to heal promptly." When the laity understands that all sources of irritation carry with them a deadly significance, the prevention of cancer will have been greatly advanced and the percentage of curable cases which come to the only known cure — operation — will be enormously increased.

Irons, E. E.: Tetanus and Antitetanic Serum; Complications and Late Death in Tetanus. *J. Am. M. Ass.*, 1915, lxiv, 1552.

Irons states that if antitoxin be given in massive doses at the earliest period of the disease and by the intraspinal or intravenous routes better results occur. He questions whether death following cases of severe mixed infection or any other complication of tetanus should be attributed to the tetanus germ.

Two cases are mentioned in which death occurred late in the disease while the patient was in the convalescent stage.

The anaphylactic shock following the intravenous method may be severe, but in the cases studied no deaths occurred.

In regard to the prophylactic use of serum, the author states that 1,500 units is not protective longer than ten to twelve days and should be repeated.

JOHN H. SHAW.

Aikin, J. M.: Post-Operative Nervous and Mental Disturbances. *Am. J. M. Sc.*, 1915, cxlix, 715.

The author gives a brief summary with conclusions of an investigation as to the true merits of surgery causing nervous and mental disturbances. He frankly states that he thinks the evidence is adequate to convict surgery as the direct cause for many nervous wrecks and fit subjects for our insane hospitals.

He states that Alfred Gordon read a paper on "Nervous and Mental Manifestations Following Castration in Women," in the Section on Nervous and Mental Diseases at the 1914 meeting of the American Medical Association, and Gordon and the audience were a unit in condemning surgery as a cure for existing psychic or neurotic conditions, and censured the surgeon who neglected or ignored the alienist, neurologist, oculist, and internist when deciding for surgery on any person of an unstable nervous system.

An analysis of many abstracts from numerous foreign and domestic periodicals of articles dealing with the subject, revealed the fact that only a negligible percentage of post-operative mental or nervous disorders are primarily traceable to surgery.

He says that a noticeable fact established by the evidence is the gradual disappearance of post-operative insanity since the advent of aseptic surgery. Hence post-operative nervous disorders are becoming avoidable. In his opinion, either sepsis, the administration of some drug, or poor judgment by the surgeon who operated upon a patient ripe for a mental or nervous collapse caused them.

He considers the last two as the most frequent ultimate causes for post-operative psychoses or neuroses. If the pathology of the case warrants surgical treatment, only imminence of a mental or nervous disorder more serious than the affliction which surgery may relieve should weigh against that procedure.

It is questionable if the term post-operative insanity has any just claim as a clinical entity in medical literature. The fact that it appears a few days or a few weeks subsequent to some surgical operation is alone responsible for its coinage. The character of the symptoms developed after an operation is not different from those developing when no operation has been performed. Facts are wanting to prove that removal of the germinal glands prior to puberty initiates nervous and mental disorders.

Numerous cases exist where surgery has relieved already barren women of painful conditions initiated by infections.

The premature loss of parental power tends to initiate nervous and mental disturbances, but it seems probable that the forces making surgery necessary for this loss were more potent than the operation in producing the nervous and mental disturbances.

If one were to balance the evidence in which surgery established relief from nervous and mental disorders against that proving it the direct cause of them, the advantages from the wise exercise of surgery would far exceed the disadvantages.

DONALD GORDON.

SERA, VACCINES, AND FERMENTS

Lowy, O.: The Application of the Van Slyke Aminonitrogen Determination to the Diagnosis of Cancer. *J. Am. M. Ass.*, 1915, lxiv, 1559.

After working with the Abderhalden reaction in pregnancy and cancer, Lowy concludes that in a good percentage of cases it is of great importance in diagnosis, even if the necessary laboratory tests do not always give accurate results.

He considers the thimble method of Abderhalden so full of errors that the test cannot be utilized with any degree of accuracy.

After mentioning several errors in the technique he advises the use of the Van Slyke aminonitrogen

apparatus, which measures accurately the amount of aminonitrogen given off in a certain quantity of blood serum.

His technique is as follows: Dried cancer substrate is added to a suspected serum in a test-tube, another test-tube is filled with suspected serum only, and both are covered with a layer of toluene and incubated 24 hours.

If the suspected serum is from a cancer patient and contains enough proteolytic enzyme it produces a reaction. The test-tube of serum only is measured for aminonitrogen, as also is the cancer substrate and serum. The latter will show an increase over the serum alone of 0.05 to 0.15 ccm. One error in this method is the danger of using a moist specimen of cancer substrate. The substrate must be absolutely dry.

In testing 82 cases, of which 42 were proved to be cancer cases, 35 were positive and 7 were negative. Of the 40 non-malignant cases examined, 6 were positive and 34 negative. JOHN H. SHAW.

Jaffé, H., and Pribram, E.: Further Experimental Study of the Specificity of the Protective Ferments by the Optic Method (Weitere experimentelle Untersuchungen der Abwehrfermente mit Hilfe der optischen Methode). *München. med. Wchnschr.*, 1915, lxi, 614.

The specificity of the protective ferments, the authors claim, is definitely settled, although their exact nature is not understood. They report additional experimental work showing that the catabolic properties of the serum can be destroyed by heating it, but can be restored by adding fresh serum. Serum containing protective ferments was heated to 58 degrees for three-fourths hour and was then inactive, but on the addition of fresh guinea pig serum it was reactivated without having its specificity destroyed. A. Goss.

BLOOD

Ohkohchi, T.: Hæmostasis (Über die Blutstillung). *Beitr. z. klin. Chir.*, 1914, xciv, 620.

The author conducted experiments on 100 rabbits to test the hæmostatic action of living (muscle tissue, fascia, fat, and omentum) and dead tissue when applied to bleeding parenchymatous organs and blood-vessels. He comes to the conclusion that the hæmostatic action of living tissue is principally mechanical and that the action attributed to the expulsion of thrombokinase is more or less secondary. The flaps of tissue must be of a certain thickness and size and should be applied to the bleeding surface, after first sponging away all blood, and held there a few minutes, after which it will adhere to it. This ability to adhere is strongest in muscle tissue. Fatty tissue is friable; fascia rolls up easily. Muscle tissue is most effective as a hæmostatic; fascia least effective. None of the tissues protect positively against secondary hæmorrhage. Muscle tissue becomes necrotic most easily, most rarely the omentum. Adhesions

to neighboring organs occur most frequently if muscle tissue is employed.

After healing, connective-tissue proliferation occurs in all cases in the parenchyma surrounding scar, causing severe injury to the epithelial cells. The most abundant connective-tissue proliferation occurs following the transplantation of pedicled omental flaps. If the kidney tissue is resected down to the medulla, a wedge-shaped area of necrosis down to the medulla occurs, probably because the arteriæ rectæ running from the periphery to the center are partially resected along with the renal tissue. Of dead substances the author employed several: bowel wall, after cleaning with water, preserving it in 70 per cent alcohol and boiling it just before using. By this method of sterilization it was made too hard, therefore he later preserved it in potassium iodide solution. Urinary bladder gave larger flaps; it is immediately placed in the solution. Dried bladder of pigs was also used. This material was excellent in milder grades of hæmorrhage. It is not a powerful irritant to organic tissue. Finally sea sponges, sterilized by boiling, were employed. This substance acts very promptly as a hæmostatic and is gradually absorbed. Its irritative action is mild, but a much thicker scar is formed than with the material from the potassium iodide solution. The author recommends sponge tissue especially for filling in bone cavities. L. A. JUHNKE.

BLOOD AND LYMPH VESSELS

Fee, F.: Ligation of the Common Iliac Artery for Iliofemoral Aneurism. *Lancet-Clin.*, 1915, cxliii, 594.

The patient, a male, aged 48, complained of pain in the right groin. He had been kicked in the right groin seven years previously, and next morning he noticed a small throbbing lump in the groin, which gradually increased in size for the next four years. He suffered little at first, but later was compelled to give up his vocation, and for the past few years had been obliged to use crutches.

Inspection revealed a large bulging tumor, occupying the entire right quadrant, extending from about one inch below Poupart's ligament to the umbilicus, and from the crest of the ilium to the median line. Distinct, strong pulsations were felt, and a bruit was heard on auscultation. The right limb was well nourished and pulsations were felt in the femoral and posterior tibial regions.

In operations for ligation of the common iliac several considerations should be borne in mind; the size of the aneurism may be sufficient to justify the transperitoneal route and make the retroperitoneal one very difficult and dangerous. On the other hand, the author thinks that the danger of accidentally cutting the deep epigastric artery, with its importance as an anastomotic branch, is too great to be treated lightly. In his case he favored the median incision, between the umbilicus and the

pubes, with the patient in the Trendelenburg position. The large pulsating mass, extending from Poupart's ligament to the umbilicus, was exposed, and exploration revealed the common iliac in a good condition for a distance of one and one-quarter inches below the bifurcation of the aorta. After cutting through the peritoneum and separating the artery and vein, two stout silk ligatures were passed beneath the artery and tied about three-quarters of an inch apart. The pulsations in the mass immediately ceased and nothing else was done. The limb was carefully surrounded with hot bottles, and slightly elevated to aid venous circulation, and the chest elevated to give anastomotic circulation the aid of gravity.

At no time was there evidence of gangrene in the foot, and his recovery was uneventful, except for swelling in the limb, which was controlled by constant bandaging. Examination two years afterward revealed a slight capillary congestion of the lower limb. He could walk perfectly and experienced no weakness.

Valentine Mott in 1827 was the first to deliberately operate on an iliofemoral aneurism, and Fee reports this case in full. Halstead states that the larger the artery, or the nearer the heart, the less impairment there is to the circulation attending its ligation. This statement the author fully agrees with, for he had gangrene following ligation of the femoral in Hunter's canal, and also in ligation just below Poupart's ligament. In aneurism of the external iliac, even when it is possible to ligate it, he does not hesitate to give the preference to ligation of the common iliac.

There are only 16 cases reported of operations for aneurisms, and 2 for hæmorrhage, that recovered without gangrene. Owing to the lack of data the ultimate usefulness of the limb following ligation of the iliac artery cannot be accurately ascertained. From 1812 to 1912, 100 reported operations for ligation of the common iliac are available, or an average of one a year. The indications are practically the same as for the first operation: arrest of hæmorrhage, cure of aneurism, cure of pulsating tumor, and for the prevention of hæmorrhage in the removal of morbid growths. Of 15 operations for the cure of aneurism, 10 died, and 5 recovered, a mortality of 63 per cent. Halstead places the mortality in the antiseptic era at 46 per cent, and in the septic period it ranged from 82 to 74 per cent.

L. B. CRAWFORD.

Stewart, F. T.: The Operative Treatment of Arterial Thrombosis and Embolism. *Ann. Surg.*, Phila., 1915, lxi, 519.

In this article, Stewart takes up the different operative procedures proposed for thrombosis and embolism of the arteries.

1. *Ligation.* Whether this method should be used or not depends on the frequency of liberation of emboli, the damage they might do, and the possibility of recognizing an intra-arterial clot before embolism.

The author believes a microscopic, aseptic, symptomless embolism takes place in all healing wounds of blood-vessels as a normal phenomenon of repair, due to the constant attrition of a strong blood current on the thrombus.

The rarity of an arterial embolism causing symptoms, if aseptic, is due to: (1) the fact that owing to the composition of arterial blood, a thrombus forms more slowly and is of firmer consistency; (2) the artery being firmer-walled, prevents a dislodgment of the thrombus by external pressure; and (3) an occluding thrombus cannot be driven far from the original site, as the artery diminishes in size in the direction of the blood stream. In a venous embolism the obverse is true. Ligation merely acts as an occluding thrombus would, and, as there is nothing to be gained by this procedure, it should not be considered.

2. *Arteriovenous anastomosis.* Although experimenters have succeeded in filling veins with red blood, none have shown that this passes through the capillaries before returning to the heart. The arterial blood in a vein always has a tendency to seek the anastomotic branches in which the pressure is weak, and return to the heart through collateral venous channels rather than through the capillaries and arteries. Also, the anastomotic arterial branches quickly fill the main trunk below the artificial junction with red blood, and produce a greater pressure than is found in the capillaries, thus preventing a reversal of current. Even in arteries without anastomosis, thrombosis would take place, since, added to the increased coagulability of the venous blood, the arteries are more or less diseased and are much reduced in caliber.

Stewart believes that most of the reported successes in this work are due merely to a passive hyperæmia caused by a shunting of the arterial blood to the vein, thus hindering the venous return and leading to a venous stasis. Von Oppel's experiments support this idea.

He also has three objections to the operative methods now used: (1) The vessels being crossed at the point of suture, exert pressure on each other, retarding the blood stream in each; (2) a reversal of arterial circulation in the artery below the junction if the collateral branches function; (3) danger of thrombosis forming in the vein at the junction of the peripheral arterial segment. Attempts to correct these contort the blood stream and render thrombosis more likely. However, the method should not be abandoned, as it may be of some aid under certain conditions.

3. *Arteriotomy.* The first report of a success by this method was by the author in 1907. It was an embolus in the femoral artery at the bifurcation.

A list is given of seven cases reported by surgeons and the addition of one, hitherto unreported, case of the author's, in which the aorta was incised just above the bifurcation, and an embolus of three weeks' formation removed from the right common iliac. There were no adhesions of clot to the intima

and the wound in the aorta was closed with a continuous through-and-through silk suture. The patient died on the third day from cardiac weakness and pulmonary oedema.

In the diagnosis of embolism of the extremities, pain over the region deprived of blood, pallor, fall of temperature, hypæsthesia, and paresis are the cardinal points. That the area of ischæmia never reaches the level of the obstruction must be remembered; also that the exact point of obstruction must be found before opening the artery. The author believes that this procedure has attained a permanent place in operative surgery and should be used more frequently.

4. *Resection.* A personal case is reported of thrombus of the femoral artery following an injury. After the thrombus had recurred twice at the seat of operation, a short piece of the artery was resected and an end-to-end anastomosis made. Circulation failed to be reestablished and amputation of the thigh for gangrene resulted. The patient recovered.

The amount of resection that can be done must be determined by the situation of the artery and the amount of mobility. It is hoped that autoplasmic venous transplantation will enable resection of arteries to be carried out more successfully. Care must be taken, however, with the venous transplant to have the valves pointed with the current and to support the segment against dilatation.

5. *Catheterization.* The passage of any instrument into the lumen of a vessel is considered very harmful and should not be thought of.

PHILLIPS M. CHASE.

Krecke, A.: Röntgen Treatment of Lymph-Gland Tuberculosis (Röntgenbehandlung der Lymphdrüsentuberkulose). *Beitr. z. klin. Chir.*, 1915, xcvi, 609.

Röntgen treatment of various forms of surgical tuberculosis has been steadily gaining ground recently, and it seems to be particularly successful in lymph-gland tuberculosis. Krecke has been using it for two years and during this time no glands have been removed surgically; nothing more has been done surgically than in occasional cases to make small incisions or puncture for pus. Thirty-six cases have been treated. They have been divided into 3 groups: (1) simple hyperplastic glands, (2) suppurating and caseous glands, (3) glands in which fistulæ had already been formed. Of the series 18 were of the hyperplastic form, 6 of the caseous, and 12 of the fistulous; the size varied from that of a dove's egg to twice that of a man's fist.

The method of irradiation was as follows: Medium hard tubes were used with a spark distance of 16 to 18 cm., focus-skin distance 20 to 22 cm. Aluminum filters 2 mm. thick were used. When possible several fields were used and an erythema dose of 10 X given on each field. The irradiations were repeated every three weeks until the glands had completely or almost completely disappeared. In some cases 12 to 15 series were given.

Among the 36 cases 13 have been completed. Of these 13, 12 were completely or almost completely cured. There was recurrence in only 1 case; 2 cases withdrew from treatment; 6 cases have been under treatment for so short a time that results are not decisive. Fifteen cases have had from 3 to 12 series of treatments, and of these only one shows no results; the others show varying degrees of improvement. The best results were obtained in the caseous and fistulous cases, the very ones that are least amenable to other forms of treatment. The results are not so good in the hyperplastic cases.

He concludes that röntgen treatment is the only correct method for tubercular glands. The treatment is rather tedious but very successful. It is preferable to surgical treatment so far as recurrence is concerned, also in the avoidance of disfiguring scars, which in young people is of considerable importance.

A. Goss.

ELECTROLOGY

Russ, S.: The Penetrating Power of the X-Rays from the Coolidge Tube. *Lancet*, Lond., 1915, clxxxviii, 792.

From observations with the Coolidge tube the author has discovered (1) that the unscreened radiation is heterogeneous; (2) when the heating current in the filament is increased, a relatively larger amount of hard rays than of soft rays is produced. When aluminum filters were interposed it was found that beneath 7 mm. of aluminum the rays were practically homogeneous. However the intensity of radiation was very much impaired by the 7 mm. filter, about 85 per cent of the radiation being absorbed.

The comparative penetrating powers of X-rays filtered through 7 mm. of aluminum and of the γ -rays of radium differ according to the material radiated. Thus for lead, the X-rays have only one-thirtieth the penetrating power of radium; for aluminum this factor increases to one-fifth; and for human tissues to one-fourth the penetration of hard γ -rays. The γ -rays specified are those emitted from radium screened by 1 mm. of platinum and 2 mm. of aluminum.

Assuming that X-rays are ether vibrations and calculating their wave length by their coefficient of absorption by aluminum, the hard X-rays obtained by filtration through 7 mm. of aluminum are found to be three times as long as the shortest γ -rays measured by Rutherford and Andrade.

G. W. GRIER.

Codd, J. A.: The Treatment of Malignant Disease by X-Rays; Its Present Limitations and the Lines upon Which They May Be Overcome. *Brit. M. J.*, 1915, i, 840.

While the selective action of X-ray and radium on cancer and sarcoma cells has been a matter of controversy, the fact remains that radium and X-

rays destroy malignant cells and leave healthy adult cells relatively intact. Preference has varied from time to time, but X-rays are now in greater favor than radium.

The author's cases that have yielded best results have been those of rodent ulcer. All have speedily yielded except one in which the ulcer involved the nasal cartilage. Large superficial epitheliomata have been found very amenable. Codd reports in detail cases of epithelioma of the lip, sarcoma of the tonsil, enchondroma, breast cases, sarcomata in various situations, and epithelioma of the dorsum of the hand. In the majority the results were well worth while, and in some instances there has been cure without recurrence.

The author uses heavy tungsten target tubes of American pattern, and expects the Coolidge tube to play an important part in the future. He uses the target at a distance of 15 cm. from the diseased area, and uses a filter of 2 mm. of aluminum with or without an additional fabric filter, such as the patient's clothes. The pastille is always covered with the same filter, and 1 pastille or 10 Kienböck given. He advises that the rays be used as a prophylactic after operations.

R. D. CARMAN.

Granger, F. B.: Further Observations on the Production of Sterility by the Röntgen Ray.
Med. Rec., 1915, lxxxvii, 776.

The author gives a second report, the first having been made in 1907, of two cases; one, a woman who gave no evidence of destructive action on the ovary on operation, after 59 X-ray exposures for uterine fibroid. The second case was that of a man who, for a legitimate reason, was given 30 exposures to produce sterility. This patient remained sterile eight years, but spermatozoa were present and active at the end of the ninth year, and vasectomy was performed. The fourth case (Case 3 not reported) was found to be sterile after the seventeenth treatment, and has remained so for eighteen months.

Granger concludes that his results hold out much encouragement for those röntgenologists who have, or may, unwittingly become sterile; and believes that we may conclude that, while the X-ray can and does produce sterility, the quantity needed to produce such a result is greater than one would suppose; and finally, when we wish to insure permanent sterility, vasectomy is surer than the röntgen ray.

DAVID R. BOWEN.

Reichold: Results of Radiotherapy (Über die Erfolge der Strahlentherapie). *Beitr. z. klin. Chir.*, 1915, xcvi, 604.

Reichold describes a series of cases of multiple sarcomata. In 2 of the cases some of the tumors were treated with mesothorium or radiothorium and the others with röntgen rays. In the other 3 cases treatment was first given with mesothorium or radiothorium; when this proved ineffective they were given intensive röntgen treatment combined with injections of enzytol, 10 to 15 injections of

3 to 4 ccm. each. From a study of these cases he comes to the conclusion that röntgen treatment is more effective than treatment with radio-active substances, at least where the tumors are accessible. The action of radiotherapy is only local. There is no formation of ferment which acts on metastases. Those sarcomata are most amenable to treatment which most nearly resemble primitive forms of tissue; the more highly differentiated ones, such as the spindle-celled sarcomata, are less so.

In the treatment of tubercular joint diseases it is generally held that only fungous disease of the synovial membrane is adapted to the treatment, while primary disease of the ends of the bone with secondary involvement of the joint is not. Reichold describes a case of the latter kind, however, which he treated for three months, giving every month a series of 15 erythema doses over small fields. His object was, by means of the cumulative effect of the cross-fire to destroy the tubercular tissues, and at the same time inhibit the periarticular infiltration. The swelling disappeared and normal function of the joint was almost completely restored.

A. Goss.

MILITARY SURGERY

Kelling, G.: The Treatment of Abdominal Gun-shot Wounds by Means of a Compression Bandage (Zur Frage der Behandlung der Bauchschüsse mittels komprimierenden Verbandes). *Zentralbl. f. Chir.*, 1915, xlii, 241.

The author recommends that all gun-shot wounds of the abdomen have a tight compression bandage placed around the abdomen immediately after the first aid dressing is applied. He believes that the firm compression of the abdominal viscera will prevent bowel contents from escaping by forcing other loops of bowel against the opening and so prevent a peritonitis, or at least localize it. It will also cause hæmorrhage from parenchymatous organs to cease. This is especially important for the transportation of wounded from the battlefield when exudate or bowel contents may be diffused throughout the entire abdomen. Furthermore, by compressing the organs the formation of inflammatory adhesions is promoted.

To corroborate his view the author conducted some animal experiments. By operative measures he inflicted similar injuries to the stomach and intestines to different sets of two rabbits. In one of them he applied a firm compression bandage after closing the abdominal wound, and in the other only a dressing. In each case the animal having the compression bandage remained alive until killed,

whereas the control animal died. A localized peritonitis, with adhesions, marked the site of the injury in the animals which had a bandage applied, whereas the controls died of a generalized peritonitis. Although the number of experiments performed were too few to be of decisive significance, yet they suggest the corroboration of the author's contention. He recommends that the procedure be tried out at the front where ample opportunity is given.

L. A. JUHNKE.

Chaput: Treatment of Suppurative Arthritis of the Knee in Military Surgery (Traitement des arthrites purulentes du genou en chirurgie de guerre). *Presse méd.*, 1915, xxiii, 200.

There are cases of arthritis of the knee that open spontaneously and heal without surgical intervention. If the arthritis is accompanied by severe injury of the patella or condyles of the femur or tibia the diseased bones should be resected after free opening of the joint through a U-shaped incision. In cases of benign arthritis or where the condition of the patient is too serious to permit of a more extensive operation, simple arthrotomy is sufficient; that is, merely incising the culs-de sac of the knee. In severe cases resection is the method of choice. If the patient refuses it or cannot stand it a complete arthrotomy should be performed, consisting of a large U-shaped incision, removal of the patella, the crucial ligaments, and meniscus, followed by popliteal and posterior diagonal drainage.

Chaput also describes the technique of arthrotomy of the shoulder, elbow, wrist, ankle, and hip joints.

A. Goss.

Marie, P., and Roussy, G.: Possibility of Preventing Decubitus in Wounds of the Spinal Cord (Sur la possibilité de prévenir la formation des escarres dans les traumatismes de la moelle épinière par blessures de guerre). *Bull. Acad. de méd., Par.*, 1915, lxiii, 609.

Though the prognosis in injuries of the spinal cord is grave it is by no means so hopeless as it has usually been considered. Paraplegias often show a remarkable tendency to spontaneous recovery. On account of the feeling of hopelessness in these cases precautions have been neglected that might have improved the condition of the patients.

It has always been held that decubitus was caused directly by the injury of the spinal cord itself, and that therefore it could not be prevented. This is untrue and bed-sores can and should be prevented in all cases. The patient cannot change his position on account of the paraplegia, so that the same parts have to support the weight of his body constantly. Prolonged compression interferes with the circulation in these parts. Moreover because of the loss of sensation the patient does not have the normal inclination to change his position. These factors, however, only produce a dry eschar that is not at all serious, but because of the lack of continence they become soaked with urine and

then infected. That this is the cause, and not the spinal injury, is shown by the fact that the site of the decubitus has no relation to the level of the cord injury. Wherever the cord injury may be the bed-sore occurs at the points of pressure on the sacrum.

To prevent the formation of these sores the bladder and rectum should be examined in every case of injury of the spinal cord. To avoid soiling with urine a retention catheter should be inserted. The bowels may be locked for a few days by the administration of opium, and the skin may be protected with talcum powder or vaseline. The patient may be placed on air-cushions while being transported. If he has been neglected during transportation and arrives at the base hospital with bed-sores already developed they may be cured if he is given the greatest care and the sores dressed once or twice a day with phenolized powders. Nurses should be instructed to change the patient's position every hour during the day and every two hours at night. Infections of the bladder and urethra should be treated with irrigations of potassium permanganate or nitrate of silver.

A. Goss.

Hezel, O.: Injuries of Peripheral Nerves During War (Kriegsverletzungen des peripherischen Nervensystems). *Med. Klin.*, Berl., 1914, No. 45, 1663.

From the experience derived during the last wars, it is evident that one to two per cent of all injuries are complicated by injuries or damage of peripheral nerves. The peripheral nerves may be injured by gunshot wounds, stab wounds, crushing injuries, and by infectious toxins. Infectious neuritides arise from infected wounds. Most frequent injuries are the gunshot injuries, which may be direct and indirect. Not only the nerves struck directly by the bullet are injured, but others more distant from the bullet canal. A distant action still unexplained takes place here. The symptoms of the distantly injured nerves retrogress in time, whereas those symptoms due to direct injury of the nerve are more or less permanent unless operative measures are instituted and the nerve sutured. Examination does not reveal whether in a groin case of nerve injury a complete severance of the continuity of the nerve or only a complete functional inhibition with retained continuity exists.

In cases of nerve injury by blunt force without a penetrating wound, even in the presence of complete functional inhibition, a restoration of function is much more probable than in injuries by bullets. Operative interference is not at all considered in such cases. In stab wound injuries of peripheral nerves, it is possible only in the rarest of cases to obtain functional conduction without surgical interference. As a rule Hezel recommends that operations on the nerves be performed as soon as the necessity of such an operation is apparent, provided the wound conditions permit. Not only motor disturbances, but also neuralgias at times are indications for surgical interference.

L. A. JUHNKE.

Heile and Hezel: Experiences in the Treatment of Peripheral Nerves Wounded in War (Unsere bisherigen Erfahrungen bei der Behandlung im Kriege verletzter peripherer Nerven). *Beitr. z. klin. Chir.*, 1915, xcvi, 299.

The scarcity of dependable data concerning the handling of wounds of peripheral nerves in previous wars and the extraordinary number of cases which have presented themselves in this war have led Heile and Hezel to report in detail the neurologic findings and operative procedures of forty cases. It is their intention to report later concerning the results obtained.

Heile discusses the surgical procedures. He considers operative interference desirable if no improvement has occurred in from four to six weeks after the injury was sustained. A general anæsthetic is to be preferred, not only because such operations require a long time, but because the hæmorrhage which supervenes after a local anæsthetic is likely to interfere with the growth of the sutured nerves.

In the majority of cases the nerve-trunk is not completely severed. It is of great importance to avoid injuring such unbroken fibers whenever possible. An attempt was made in some cases to search out the corresponding bundles in the proximal and distal ends and to suture them, but the difficulties were very great. Much time and care is required to dissect the nerve-trunk out of the scar tissue in which it is usually embedded. This may be facilitated by beginning at either side of the scar and loosening the nerve for a short distance in the healthy tissue, holding it up by thin strips of gauze and by gentle traction, putting the adherent portions on the stretch. The nerve-sheath is then split and loosened from the nerve-trunk. In the healthy portion this is easily accomplished with a blunt instrument, a small elevator, or strabismus hook. By the injection of air or salt solution, the sheath is ballooned out and loosened from the trunk. Over the injured portion, the perineurium may be markedly thickened and pressing on the nerve. In such a case, a sharp instrument is required to loosen it. If neighboring bones are broken, there may be splinters of bone in the scar or even in the nerve, or the callus or bony spines may be pressing on the nerve. The separation of the very firmly adherent blood-vessels is very difficult and often further complicated by injuries to the vessel walls. These aneurismal enlargements often cannot be diagnosed in advance on account of the intervening scar tissue.

When the proportion of broken to unbroken bundles is small, it is not so difficult to adapt the distal and proximal ends of the fibers which belong together, but when the proportion is reversed, this is frequently not possible. A little help may be obtained by laying the fibers in their apparent anatomical arrangement before suturing. The motor and sensory fibers may be distinguished by electricity, but this cannot always be used, as in the majority of cases the distal portion cannot be

stimulated by either the galvanic or the faradic current, and in others the proximal portion may fail to be stimulated. Electricity is, however, useful at the beginning of operation in badly distorted cases to distinguish the principal nerve-trunks, as the median from the ulnar, etc. It is hopeless to try to associate by this means the central and peripheral portions of individual fibers. Experience in former wars seems to show that such careful adaptation is not of great importance. Whenever the whole nerve was severed or severely injured, the necessary resection was done and the ends sutured in the best way to avoid stretching, if possible. For suture material fine silk was used at first, later fine catgut. Whenever individual nerve fiber bundles remained intact, they were used as splints for the sutured ones. Unless tension made it necessary to go deeper, the stitches have included only the supporting substance of the nerve, but it is always necessary to see to it that the portions brought into contact consist of pure nerve substance.

Whenever the perineurium was sufficiently thickened to press upon the nerve, it was removed as a foreign body. It was also frequently removed in cases in which it merely showed definite symptoms of inflammation, and especially in cases which showed symptoms of peripheral neuritis. In many cases the pain was permanently relieved in this way, in others it returned after a while, but these latter were apparently cases of ascending neuritis. The sheath should, in any event, be split lengthwise to free the nerve-bundles of the inflammatory exudate between them. Such an exudate may result from the suturing of the nerve. Therefore, the sheath should be split for several centimeters on both sides of the suture, and this slit should not be resutured.

In cases requiring resection up to six centimeters, the central and peripheral ends of the nerve were dissected out of the soft parts and displaced subcutaneously as far as possible; the distance was decreased by flexion or extension, and finally, by fine spiral incisions in the perineurium, the ends were lengthened somewhat. Stay sutures along the sides of the nerve were used to assist in holding the approximated ends together, and if the tension was great, these stitches had to include nerve-bundles to avoid tearing out. Great care was exercised to see that nothing was interposed between the active nerve substance of the sutured ends. Finally, it is necessary to protect the sutured nerves from pressure, especially in cases of bone fracture. This is best accomplished by the interposition of a neighboring muscle, or a pedunculated muscle-flap.

In cases in which it was necessary to use tubes, rubber tubes, prepared from pure rubber and not vulcanized, were used. The tubing was boiled in salt solution and split lengthwise. Prepared in this way it can be used to enclose the stumps of nerves or it can be used to protect the sutured nerve from its surroundings.

Hezel describes the 40 cases in detail, giving the

point of entrance and exit of the bullet, which nerves were injured and how badly, a description of the findings upon operative exposure of the part, and the surgical procedures applied. The neurologic examination included, with a few exceptions, only the motor functions. The injuries were classified as severe, moderate, and light. In severe cases, the nerves were not responsive to either the galvanic or faradic current, and the muscles did not respond to the faradic and but sluggishly to the galvanic. In moderate cases the electrical irritability of the nerves was not absent, but materially reduced quantitatively, and sometimes altered qualitatively; the muscles qualitatively. Light cases showed at most quantitative reduction, no qualitative changes. The findings upon exposure of the injured area vary according to whether or not the nerve is completely severed. If it is completely severed, both the ends are usually embedded in dense scar tissue with a space between them. Unless the operation is undertaken very early, the central stump will show a swelling consisting of a neuroma. Otherwise the severed nerves are not much enlarged, and the peripheral portion may even be somewhat atrophied. If the nerve is not broken, but merely grazed or crushed by the shot, there will be an irregular swelling of several centimeters length distal to the point of injury. This is doubtless caused by inflammatory exudate inside the nerve-sheath with consequent obstruction of the venules and lymphatics of the nerve. This swelling, which may be twice or even three times the diameter of the nerve, is gradually reduced, and induration of the nerve-sheath and interstitial tissue takes the place of the infiltration. In cases in which the nerve is penetrated by the shot, so that the sheath is opened, this distal swelling is entirely absent, and the nerve on both sides of the lesion is slightly swollen, soft, and reddened. Upon opening the sheath of a nerve that was not cut by the shot, one frequently finds more or less of the contained fibers ruptured with scar connective tissue between the ends of the fibers, and if sufficiently late, the beginning development of neuromata. These individual fibers, even as the whole nerve under similar circumstances, must be resected and the ends freshened before regeneration is possible.

There is as yet no diagnostic method of determining whether or not in severe cases there is destruction of continuity of the whole nerve or only of some of its fibers. Neurologic examination will show disturbance or absence of function, and in every case of absence of conductivity the possibility of loss of continuity must be considered.

M. M. MATTHIES.

Voelcker, F.: Operative Findings in Gun-shot Wounds of Peripheral Nerves. *Deutsche Ztschr. f. Chir.*, 1915, xlv, April 3.

The author recommends an early operation in nerve injuries but it is necessary to wait for an aseptic condition of the wounds. He reports on sixteen cases. The most important operative finding is

callus degeneration of the tissue in the wound canal which often causes firm constriction of the nerve. The nerve has to be carefully dissected out of these callus masses and freed sufficiently for the following suture. Very often there is fixation of the nerve to the bone which frequently causes a great deal of neuralgic pain. The displacement of the severed nerve-ends may be not only longitudinal but also lateral and twists may occur, which conditions necessitate painstaking preparation of the nerve-ends out of the mass of callus tissue. In totally severed nerves the suture was made with very fine catgut. In order to avoid reformation of adhesions a cuff of free fascia was laid around the union of the nerve-endings.

A. STEINDLER.

Caldwell, J. R.: The X-Ray Theater in War Hospitals. *Lancet*, Lond., 1915, clxxxviii, 854.

At the Baltic and Corn Exchange Hospital in Calais the X-ray room is fitted up as an operating room, and operations for the removal of foreign bodies are performed upon the horizontal fluoroscope. The room is perfectly dark for fluoroscopy, an automobile headlight immediately over the table furnishing the light when needed for the operation.

In cases in which the external wound has healed, the foreign body is first located by fluoroscopy, the point of the forceps placed over the shadow, the lights turned on, and the operation proceeds in the usual way. From time to time the lights are turned out, the X-ray is turned on and the relative position of the forceps in the depth of the wound to the foreign body is noted. Moving the tube from side to side and noting the relative movement of the two is a very valuable means of estimating their approximate relationship.

In septic cases where sinuses exist, after very careful cleansing, the foreign body is approached through the sinus, the same method of control by frequent X-ray examinations being used.

By using these methods the author has been able to remove many foreign bodies from extremely difficult locations in cases where previous operations had proved unsuccessful.

G. W. GRIER.

Mills, L.: Wounds Received in Battle; Observations Made During Recent Service in Austria. *J. Am. M. Ass.*, 1915, lxiv, 1224.

Mills served as a volunteer in the second eye clinic of the Vienna General Hospital in 1914 for a period of three months. He saw a total of 1,100 cases of projectile wounds, 332 of which were under his personal charge. The latter were 177 bullet wounds, 95 shrapnel wounds, 4 shell wounds, 7 bayonet wounds, 17 accidental injuries, and 22 purely medical cases.

Sixty-three per cent of the bullet wounds were infected, the shrapnel wounds showing over 85 per cent of infection. Of all septic cases, 58 came to operation. Six septic cases were lost as follows: 3 perforating wounds of the knee (radical surgery

came too late); one was a comminuted compound fracture of the left forearm (tetanus — early operation was refused); one death was due to peritonitis and pyopneumothorax, and one from meningitis (shrapnel perforation of lumbar spine). Two other deaths were due to perforation and pulpification of the cord.

Three tetanus cases recovered under antitoxin and chloral. In one case amputation in the middle of the left forearm saved the patient's life.

Amputations were done for tetanus, gas bacillus infection, torsion, necrosis of a fractured leg, and for septic knee-joints.

At first in phlegmons small incisions were the rule, but later large incisions proved necessary to insure thorough drainage. In practically all wounds of the bones comminution was extensive, the clean perforations being seen in only 2 out of 101 injuries.

Recovery took place in one case of gunshot wound of the abdomen, in which the wound had healed before admission. Another case had a rifle wound received at a distance of about 400 yards. The bullet entered the right supraclavicular fossa, while the patient was lying on his left side, pierced the scapula, and followed the contour of the chest until it reached the eighth rib in the posterior axillary line. The missile comminuted the eighth, ninth, and tenth ribs, the fragments of which tore the pleura and peritoneum, seriously injuring the liver. Drainage was inserted. Death from peritonitis and pyopneumothorax.

Of 6 cases of bullet wounds of the knee only 2 made a functional recovery. In infected wounds, lateral and posterior incisions and irrigation with H_2O_2 was the rule. One patient recovered by substituting saline solution for the H_2O_2 . Many could have been saved by early amputation, but this was refused and a grave general sepsis resulted. Large flaps were made in all amputations, and were held together by dressings, allowing access and drainage. All cases of lung perforation recovered.

In three vertebral cases death ensued from meningitis. Laminectomy in one case showed pulpification of the cord. Recovery took place in one case presenting a small clean wound about 6 cm. to the right of the body of the eighth dorsal. There was a good functional result, in spite of a sharp left lateral curve. Another recovery was observed after removal of a shrapnel bullet from between the third and fourth lumbar vertebrae, which produced slight pressure on the cord from spiculae.

Cases were seen with bullets passing through the whole length of the neck, sparing the cervical vessels and nerves. Laceration of such vessels on the battlefield resulted in death before first aid could be given.

Close range shots of the cranium are fatal from fragmentation and disruption of the brain. A more favorable outcome was observed in guttering of the frontal bone with a corresponding guttering of the frontal convolutions. Trephining should often be postponed until the usual mild infection has subsided.

The röntgen rays are an essential means to proper diagnosis. Thus, an apparently beginning triomus of tetanus proved a comminution of the right coronoid process.

Bayonet wounds at the front are very serious, if not fatal, but those which reach the hospitals are trivial but infected.

The Austrian physicians, in spite of all previous writings, fell into the error at first of packing (tamponading) wounds, so that these were ready to burst from pus, gangrenous muscles, and bone fragments. Later this was corrected. This war has shown a greater incidence of sepsis than any previous wars since medieval times. GUSTAVUS M. BLECH.

Wright, A. E.: Wound Infections; Some New Methods for the Study of the Various Factors Which Come into Consideration in Their Treatment. *Proc. Roy. Soc. Med.*, 1915, viii, 41.

In the present war the fact which is of astounding importance is that almost every wound is infected, some of them very badly so.

The clothing and skin of the soldiers are usually in a filthy condition. The projectile passing through this zone of filth necessarily carries infection along its path, many times very deep and beyond the reach of antiseptics. This results in a primary infection of streptococcus with organisms from the faeces, especially the gas bacillus and tetanus bacillus. Death may result from erysipelas. Cellulitis, tetanus, or gas gangrene. If the wound becomes open and aerobic conditions prevail a secondary infection with other pus organisms—especially bacillus proteus—may result.

The author has undertaken a series of experiments in connection with wound infections. The first problem attacked was: Can the microbes which are found in wound infections live and multiply in the unaltered blood fluids? By means of capillary pipettes successive dilutions of pus were made, 1 to 10, 1 to 100, to 1 to 100,000. These were then separately mixed with an equal quantity of normal serum. After incubation it was found that: (1) higher dilutions of pus gave only streptococcus; (2) lower dilutions gave streptococcus, staphylococcus, and an anaerobic bacillus; (3) all other organisms were inhibited or appeared only after fairly heavy sowing with pus and comparatively late.

Pyogenic organisms are therefore classified into (1) serophytes—those finding food-stuffs ready made in blood fluids and can, in the absence of phagocytes, grow without restraint; and (2) serosaprophytes—those which cannot grow and multiply in the blood fluids until a change, probably a degenerative change, has passed over those fluids.

The next problem was to determine whether the lymph in a wound acted similarly to the normal blood serum. By means of a special glass leech it was possible to collect the lymph from the wall of a wound and obtain it practically free from phagocytes. It was found that, whereas the wound

itself was teeming with many varieties of pus organisms, both serophytes and serosaprophytes, the lymph within the leech showed a pure culture of streptococcus.

The problem next arose as to what was the cause of this "corruption of the lymph" in the wound which allowed all forms of organisms to grow. It has been shown that serosaprophytes require a change in serum before it can be utilized by them as food. This change is opposed by the antitryptic property of the serum. It is only when this antitryptic property has been overwhelmed by an excess of trypsin that the proper preparation of the serum for the serosaprophytes can result. In a wound the antitryptic power of the serum may be overwhelmed by the trypsin obtained either from an especially large number of bacteria or by the trypsin liberated from broken down phagocytes. This "passive defense" of the blood afforded by its antitryptic power prevents microbes from converting to their uses the nutrient substances of the blood fluids and must greatly assist the "active defense" afforded by the phagocytes and the bacteriotropic substances in the blood.

The next problem attacked was: What are the factors which influence the emigration of white blood corpuscles into the wound? The method used was as follows: capillary tubes were filled with blood and the chemotactic substance under question and immediately centrifuged. On clotting the cellular elements were at the bottom of the tube and, after incubation, it was possible to determine how far the phagocytes had emigrated into the clear clot above.

By this method the following data were determined: (1) Leucocytes will move in any direction toward a chemotactic substance. (2) Anaërobic conditions are more favorable for emigration than aërobic. (3) Emigration occurs more freely at 40° than at 37°; does not occur at 15° when exposed to a temperature of 0° for one hour; when the temperature is raised emigration takes place as before. (4) Vapor of ether does not affect emigration. Vapor of chloroform abolishes it. (5) Physiological salt solution causes vigorous emigration of white cells. Strong salt—e.g., 5 per cent solution—suppresses emigration. (6) Bacterial suspensions when concentrated suppress emigration; weaker dilutions cause vigorous emigration; very weak dilutions act only as diluent acts.

The end-result in these tubes with blood and bacteria may be: (1) either destruction of the bacteria or (2) an over-running by the bacteria with the breaking up of the clot due to the liberation of trypsin from broken down phagocytes.

In the treatment of wound infections the first method which suggests itself is the antiseptic method. Antiseptics are of great use as a preliminary application before operation and in recent superficially infected wounds; e.g., a compound fracture. In wounds in war, however, the conditions are different. When the wound reaches

the surgeon it is already infected deeply beyond the reach of antiseptics. The track of the projectile is blocked by blood-clot and hernia of muscle. The best that could be obtained in these infections would be only a partial sterilization and the infection would in a few days be as bad as before. Concentrations of the antiseptic which would be effective on the skin would be ineffective in a wound, because its action would be neutralized by the body fluids and pus.

Is there any reasonable prospect of sterilizing the wound by the application of antiseptics? It is possible to sterilize the pus in the cavity of the wound. There are, however, recesses which cannot be reached and the granulation tissue in the walls of the wound hold microbes which it would be impossible to sterilize. Since it is impossible to sterilize a wound, what is the advantage to the patient of having the number of microbes reduced? Wright does not believe there is any advantage since the reduction is merely temporary. The soil may be even made more favorable for the microbes by the use of antiseptics. Apparently the only use of antiseptics in the treatment of wounds is as a prophylactic of the graver infections which were present before Lister's time. As treatment the method is not effective.

The next method discussed is called the physiological method. This method is the basis of the surgical methods usually advocated: namely, the opening and draining of abscesses; free incisions into infiltrated tissues; hot fomentations; leaving operation wounds unsutured; and dispensing with flaps. These methods cause an outflow of pus with the influx of fresh lymph and phagocytes. It is of advantage in most wounds to have a marked outgoing current of lymph with sufficient phagocytes with it to antagonize microbes present but not to destroy the antitryptic power of the serum. In wounds where the infection is in dry and infiltrated tissues with a small amount of serum exuding, it may seem undesirable to have emigration of many phagocytes, else their destruction in the absence of fresh lymph may result in the overpowering of the antitryptic substance in the serum. This would result in a favorable medium for serosaprophytes.

The lymphagogue which the author has used successfully for many years consists of a solution of sodium chloride 5 per cent, sodium citrate 0.5 per cent.

The third method of treatment is vaccine therapy. In civil life vaccines have proved eminently successful in prophylaxis of certain diseases and in the treatment of certain local infections. In war, experiments have not been carried out to an extent to warrant conclusions. In cases of erysipelas and cellulitis the results are often brilliant. In well-drained wounds vaccines seem to favor phagocytosis and increase the outpouring of lymph. In closed wounds and in septicæmia, vaccines do not appear to give good results.

J. H. SKILES.

GYNECOLOGY

UTERUS

Chapple, H.: Cancer of the Cervix. *Guy's Hosp. Gaz.*, 1915, xxix, 189.

The author attributes the hopeless condition of many patients to three factors:

1. That the early stages of the disease are accompanied only by slight signs.

2. That these signs are usually only irregularities of normal phenomena in women, and so are disregarded by them and, very frequently, by their medical attendants.

3. The repugnance with which most women regard the suggestion of a pelvic examination.

In making a diagnosis, three conditions may simulate the ulcerating type of cervical cancer:

1. Syphilitic chancre, which is so rare as to be almost negligible. Its nature is soon made manifest by the secondary symptoms that follow. In any case an early diagnosis is usually not made, except by the microscope.

2. Tuberculous ulceration is not nearly so common, and the differential diagnosis will usually require the microscope.

3. Erosion which imparts to the finger superficially a soft feeling, well described as velvety, whereas the deep tissues often are very hard. It is not friable and although it bleeds, the hæmorrhage is not nearly so free as in the case of cancer and no particles of growth come away on the examining finger.

In the inoperable cases there are three factors to be dealt with: hæmorrhage, foul discharge, and pain.

The abdomen is opened in its lower segment, the ovarian vessels are tied and the ovaries removed. The internal iliac arteries are then exposed and ligated securely. The ureters are dissected out and freed along their pelvic length, and the glands are dissected off the iliac vessels *en masse* on both sides, reaching from the obturator foramen to the bifurcation of the aorta. The peritoneum is then restored and the abdomen closed in the usual way. Ten days later the patient is placed in the lithotomy position and the mass removed with a sharp spoon. There is no hæmorrhage and the scraping process can be most efficient. The edge of the growth is treated with diathermy. EDWARD L. CORNELL.

Maurer, A.: The Results of Sixty Abdominal Hysterectomies for Cancer of the Cervix (Les résultats de soixante hystérectomies abdominales pour cancer du col de l'utérus). *Rev. de gynéc. et de chir. abd.*, 1914, xxiii, 97.

Maurer describes a series of 60 abdominal hysterectomies for cancer of the cervix performed at the Broca Hospital from 1905 to 1913. The case his-

tories are given in detail, together with the histological examination in 53 cases, and illustrations of many. The total mortality was 28.3 per cent. He makes a comparison of the value of simple abdominal hysterectomy and the extended operation, including extensive removal of the parametrium and in 9 cases bilateral ligation of the hypogastric. In the 30 simple cases the mortality was 26.6 per cent; in the 30 cases of extended operation the mortality was 30 per cent. Considering the fact that the latter were the most advanced cases, the mortality is practically no greater. The extended operation has the advantage of carrying the operation into normal tissue, so that there is no incision through cancerous tissue and therefore no possibility of infection or inoculation with cancer-cells. Neither is the operation any more serious with ligation of the hypogastrics. This preliminary ligation is to be recommended, for the patients suffer less shock, as ligation makes the field of operation bloodless and aids in avoiding manipulation while isolating the ureter and excising the parametrium. There was a greater percentage of survivals for a longer time after the extended than after the simple operation.

A. Goss.

Heineberg, A.: An Improved Method of Suturing the Flaps in Amputation of the Cervix. *Am. J. Obst.*, N. Y., 1915, lxxi, 751.

The author sutures the flaps after a single flap amputation or tracheloplasty procedure as follows: A chromic catgut suture, designated a tension suture, is armed at each end with a well-curved needle. Each needle is passed through the flap about a quarter of an inch from its edge; the points of introduction are on the raw surface of the flap one-eighth of an inch on each side of the median line, and the points of emergence are on the vaginal surface of the flap. Both needles are then introduced through the base of the flap at the junction of the raw surface and the mucous membrane of the cervical canal. They are passed through the entire thickness of the lip of the cervix and made to emerge upon the vaginal surface about three-quarters of an inch apart. After sufficient traction has been applied to the ends of the sutures to invert the flap and bring its edge and base into accurate apposition the ends of the sutures are tied to each other. The other lip is sutured in the same manner.

The two lips of the cervix, which has been separated by the amputation, are drawn together by a mattress suture placed in each side of the cervix about a quarter of an inch external to the canal. This suture begins in the vaginal surface of the anterior lip about one-half of an inch above the edge

of the flap and emerges upon the raw surface of the flap near its base. It is then passed through the lower lip from the raw to the vaginal surface. In a like manner it is passed back through both lips on a line one-quarter of an inch external to the first. When the two ends of this suture are tied to each other the tension should be sufficient to insure hæmostasis and approximation of the edges of the lips. These edges are then held in accurate apposition by interrupted sutures which should be placed superficially, and firmly but not tightly tied. Care must be taken to avoid injury to the bladder by the suture which pierces the entire thickness of the anterior lip of the cervix. C. H. DAVIS.

Gardner, W. S.: Hypertrophies of the Endometrium. *J. Am. M. Ass.*, 1915, lxiv, 1831.

In the study of the pathologic conditions of the endometrium which are not the results of infection, several are encountered that may be confused with each other, or with the normal endometrium, or with adenocarcinoma of the body of the uterus. The premenstrual endometrium is the normal form most frequently mistaken for some pathologic state; but occasionally a hypertrophic endometrium with narrow contracted glands, unless care is exercised, may be mistaken for a normal post-menstrual type. Among these non-inflammatory hypertrophies are those associated with extra-uterine pregnancy, with ovarian growths, and a third group for which we have at present no adequate explanation and which may be divided into two groups, the glandular and the interstitial.

Non-malignant overgrowths of the endometrium are comparatively common. In some instances the whole endometrium is thickened; in others there are found pedunculated masses of greater or less extent. They occur most frequently between the ages of 40 and 50, but are also found at periods of life both earlier and later than this.

The symptom that attracts the attention of the patient is hæmorrhage. This hæmorrhage is a persistent, but not a profuse flow, in most cases, resembling in quantity a rather free menstrual period and continuing for weeks or months. In this it is not unlike the bleeding due to adenocarcinoma of the body of the uterus, and since the age incidence is the same, it is very important that we should have some definite means of distinguishing between them. The only reliable method is by the proper interpretation of microscopic examinations of uterine scrapings. EDWARD L. CORNELL.

Whitcher, B. R.: Uterine Carcinoma and Its Prompt Diagnosis. *Interst. M. J.*, 1915, xxii, 388.

As a means of prophylaxis against uterine cancer the following is advisable:

1. In from six to eight months after confinement the attending physician should visit his patient and make a careful and thorough examination, so as to determine whether there has been any traumatism, and, if so, its nature and extent.

2. Every woman who has borne children should be examined once a year by a competent physician until she is 55 years old, and in that way a large number of cancer cases could be diagnosed and cured in their early incipency.

A work of educating the public along this line has of late been attempted at Königsberg, by Winter. The dangers of cancer have been pointed out by an article in a leading daily paper, giving explicit details of cancer and the importance of its early diagnosis, showing that most cancer cases are curable if only operated upon in time.

EDWARD L. CORNELL.

Clark, S. M. D.: Preliminary Report on the Use of the Percy Cautery in Carcinoma Uteri, with Especial Reference to Its Use as a Forerunner to the Wertheim Operation. *Surg., Gynec. & Obst.*, 1915, xx, 558.

The author refers to the work of Byrne and advances various reasons as to why the results of cauterization after his method have been disappointing in other hands. He gives credit to Percy for introducing a definite technique for the cauterization of cervical carcinoma. He calls attention to the value of the water-cooled specula and the electric cautery and the manner of controlling the heat by means of the hand in the abdomen. The fact is noted that cancer-cells are killed if raised to a temperature of 113° F., whereas normal cells are not injured until the temperature exceeds 131° to 140°.

At first the author used the Percy cauterization only in surgically abandoned cases. There was striking improvement as regards hæmorrhage, toxæmia, appetite, pain, and the patients' general condition. It is claimed that unquestionably the life of these patients was prolonged. He mentions two of his cases which became operable after repeated cauterization. In these cases numerous microscopical examinations of the tissue removed by the Wertheim technique failed to reveal any carcinoma. He refers to other cases in his clinic which are improving to such an extent that he hopes they will be able to stand a radical operation.

He quotes statistics from the London Cancer Hospital to the effect that in 100 autopsies on women who died of uterine cancer, 46 per cent had no extrapelvic lymphatic involvement.

In borderline cases, the Percy method is used with the idea of transforming the cases into frankly operative ones. In any case with ulceration, preliminary cauterization stops bleeding and infection and lessens the toxæmia, thereby making the case a better operative risk. The preliminary cauterization takes from thirty to fifty minutes; therefore he does the radical operation at a second sitting. He feels that a judicious combination of the heat plan of treatment and that of total ablation by the Wertheim method offers possibilities for the greatest percentage of permanent cures.

In the earliest type of cases an immediate pre-

liminary cauterization is done, lasting about twenty minutes. This preliminary destruction of superficial carcinomatous cells lessens the chances for grafting of malignancy during the radical operation, which immediately follows.

Twenty-five of the author's cases have been treated, following with some modifications of the Percy idea. Most of the cases were operated upon within the last seven and one-half months. At present the electric iron is used and care is taken not to carbonize the tissues. No curetting is done. In the proliferating external type of carcinoma, the cutting blade of the cautery is used when the mass prevents access of the cautery to the cervical canal. In the case of very large external masses, the abdomen is not opened at the first sitting. This may be done at the next cauterization about three weeks later.

Two serious hæmorrhages, one followed by death, are reported. The death occurred in a very advanced case. To avoid hæmorrhages the author contemplates ligating both uterine veins and one ovarian. Since writing the paper, he states that he has ligated both internal iliac veins and one ovarian during the first laparotomy, in six cases.

Two modifications of the Percy specula are used. One of these is made in halves fitting into each other, to be separated after insertion by means of handles. The other is made conical to obviate forcible dilatation of the vagina.

He considers that the introduction of heat and the principle of starvation by means of ligation of the internal iliacs are distinct advances in the treatment of cervical cancer.

Klein, G.: Combined Radiotherapy of Carcinoma of the Uterus and Breast (Mehrfährige Erfolge der kombinierten Aktinotherapie bei Karzinom des Uterus und der Mamma). *München. med. Wchnschr.*, 1915, lxii, 499.

In a recent article Klein described his technique for treating carcinomata with a combination of mesothorium or radium rays, injection of chemical substances, and röntgen therapy. In this article he repeats the technique and gives the results in 100 cases of carcinoma of the uterus and breast. He found in a large percentage of inoperable cases that the patients were kept in good condition for two years or more. While the effect may not be permanent, even that is much better than the results usually attained by cauterization. In another series of cases in which the method was used after operation the patients have been kept free from recurrence for periods of three to three and three-fourths years.

A. Goss.

Cleland, F. A.: Uterine Hæmorrhage at and After the Menopause. *Canad. M. Ass. J.*, 1915, v, 389.

Cleland accepts Clark's theory of ovarian degeneration as the factor governing the menopause. The effects of the menopause may be exerted at any time during a period of thirty years and should

never be accepted as the cause of excessive menstruation. He makes a plea for public education regarding uterine cancer: insists that the question of malignancy shall be first determined in all such cases, and condemns the curette except for this purpose. Endometritis is excluded as an explanation for menorrhagia at the menopause, and the treatment for other possible causes is briefly outlined.

W. H. CARY.

Healy, W. P.: Arteriosclerosis and the Control of Uterine Hæmorrhage. *N. Y. M. J.*, 1915, ci, 996.

The author believes that uterine hæmorrhage may be secondary to arteriosclerosis in the heart, liver, or kidneys without marked involvement of the blood-vessels of the uterus; or that a sclerosis may occur in the uterine vessels without any evidence of its existence elsewhere in the body. The uterine arteries are subject to the same general causes that produce arteriosclerosis, but menstruation, abortion, pregnancy and inflammation are no doubt important factors which lead to the development of sclerotic changes in the uterine vessels. While hysterectomy is the common form of treatment for persistent bleeding from sclerosis of the uterine vessels, these cases should be given the benefit of treatment by radiation, either with the X-ray or radium, before subjecting them to the greater risk of hysterectomy.

L. K. P. FARRAR.

Barringer, E. D.: Acute Traumatic Displacement of the Uterus. *Am. J. Obst.*, N. Y., 1915, lxxi, 758.

The author agrees with other writers that acute traumatic displacement of the uterus is rare, but she has seen six definite cases during the past ten years. The symptoms may be well-defined or very vague, and the diagnosis may be sprained back, contusion of the coccyx, spinal concussion, "railway spine," etc., but she believes that these cases may be recognized if the examining physician will associate an acute uterine displacement with the following symptoms:

1. Pain, which is usually complained of in the lower portion of the sacrum and coccyx. If the patient attempts to stand she may complain of slight nausea and vague distress in the epigastrium. Pain is often localized over the sacro-iliac synchondrosis or down the course of the sciatic nerve. Pain in the region of the section and painful defecation may be complained of. Headache, generally occipital in type, may also be a prominent symptom.

2. Bladder irritability is often complained of and may be a most distressing symptom.

3. Change in the type of menstruation is sometimes noted. There may be a uterine hæmorrhage following the accident—this occurred in one case. In two cases menstruation had become painful, prolonged, and too frequent. One case had amenorrhœa. One case treated early had little change in menstruation.

4. A characteristic posture and gait are noted with uterine displacements. The shoulders are generally stooped forward, with the head carried slightly forward, and the dorsal and lumbar spine are held in a position of slight kyphosis, the appearance being very similar to the posture of traumatic lumbago.

Early diagnosis and treatment are very important.

C. H. DAVIS.

Cherry, T. H.: Post-Partum Retrodisplacement of the Uterus. *N. Y. M. J.*, 1915, ci, 889.

The author finds that displacement of the uterus occurs more frequently as the patient progresses in her puerperium up to the sixth or eighth week than at the end of the second week, the usual time for making post-partum examinations. In a series of dispensary cases of retrodeviation of the uterus, 70 per cent were found to have followed an abortion or labor, and only 30 per cent occurred from other causes. Subinvolution of the uterine ligaments together with laceration of the cervix and pelvic floor, is the chief factor producing a displacement of the uterus, but abuse of the abdominal binder during the puerperium, the dorsal posture, a full bladder, or straining at stool, influence the tendency to this condition.

Preventive treatment may be instituted in the months before confinement by outdoor exercise and massage. Mild exercises of the arms, legs, and abdominal muscles may be renewed on the second or third day post-partum to favor involution of the tissues.

All perineal and all deep lacerations of the cervix should be immediately repaired. Involution of the uterus is aided by the lateral, prone, and knee-chest positions, the use of ergot, hot douches, and tampons, and by nursing, which should be insisted upon for a period of at least two months. When a retrodisplacement has occurred, the introduction of a pessary is advisable, and if it is worn for several months the result is usually most satisfactory.

L. K. P. FARRAR.

ADNEXAL AND PERIUTERINE CONDITIONS

Löhnberg, E.: Conservative Operation on the Ovaries (Beitrag zur Kasuistik der erweiterten Ovarienresektion nach Menge). *Zentralbl. f. Gynäk.*, 1915, xxxix, 297.

Conservative surgery of the ovaries has been gaining adherents steadily in recent years. Matthei held that resection was to be preferred to oöphorectomy only when a part of the ovary was visible macroscopically as normal tissue. Menge extended this indication to include cases where no normal ovarian tissue was visible. Even where the whole ovary is apparently transformed into tumor he shells out the tumor leaving a remnant of tissue in the hope that it may contain enough normal ovarian tissue to continue menstruation. Löhnberg describes two cases which he operated upon in this

way. The ovaries were apparently transformed entirely into cysts, but he left a little tissue. In one case the menses were resumed and continued regularly, and finally conception took place. In the other the patient menstruated only once, and then the menses stopped again. But even in this case there was evidently a little normal ovarian tissue retained, and the other case shows that the possibility of conception may be preserved even in apparently hopeless cases.

A. Goss.

Guthrie, C. C., and Lee, M. E.: Ovarian Transplantation. *J. Am. M. Ass.*, 1915, lxiv, 1823.

Two sister puppies 3 months old were operated on, the ovaries in each case being removed and transplanted into the other animal. At this time the organs measured about 6 mm. in length. The animals were operated on simultaneously. Each ovary was exposed and its pedicle firmly grasped throughout its entire extent by curved forceps. A fine silk thread was then passed through the base of the ovary by means of a cambric needle; the ovary being then completely separated from the pedicle with a knife and instantly transferred to the other animal and fastened to the pedicle of the former ovary by means of the thread previously inserted into its base.

The animals made uneventful recoveries and appeared the same as dogs not operated on. One was lost, while the other was killed through accident eighteen months after operation, at which time the animal was in good condition. The right ovary appeared normal and was much larger than at the time of transplantation. It was whitish pink and showed a few dark spots. The left ovary was represented by a cystlike mass the size of a navy bean. It was dark in color and soft to the touch. When the capsule, which was markedly thickened, was opened, a small gelatinous mass was found. It was clear to pale yellow and measured about 10 by 4 by 2 mm. As no attempt at mating the animal was made, the experiment is not conclusive as to the possibility of pregnancy.

The result leads us to believe that ovarian transplantation in dogs is not only feasible, but also offers a promising means of obtaining information regarding optimum conditions for success as well as heredity.

EDWARD L. CORNELL.

Kohlman, W.: End-Results of Round Ligament Fixation. *South. M. J.*, 1915, viii, 383.

In cases where the round ligaments have been found normal, the Gilliam-Doleris method of fixation was employed, with the modification that the ligaments were fastened under the fascia, or in suitable cases the abdominal operation following the suggestion of Rumpf and Palm was finished with an Alexander-Adams fixation. The results of these operations have been found uniformly satisfactory.

In cases where the round ligaments are infiltrated, preventing their being drawn to the more superficial structures for fixation, a modified Ols-

hausen method or a fixation method advised by Leopold, Czerny, and Kelly is used. Bumm's modification of the Olshausen method is the one recommended. It has been employed in 216 cases. Of these, 70 cases have been followed since operation, 60 of whom were found in good condition and free from important symptoms. Eight of the cases have been pregnant since the operation and have passed through a practically normal delivery. Considering that most of the cases had severe pathological conditions complicating fixed retro-flexion, the author believes that the results gained by this method have been very favorable. C. D. HAUCH.

Hüssy, P., and Wallart, J.: The Interstitial Gland and Its Relation to Röntgen Castration (Interstitialle Drüse und Röntgenkastration). *Ztschr. f. Geburtsh. u. Gynäk.*, 1915, lxxvii, 177.

The authors give a detailed histological description, illustrated by a colored plate, of the ovary and uterus of a case of myoma treated by röntgen rays. They conclude that the rays have a destructive elective action on the follicles of the uterus. However some primordial follicles may escape degeneration and remain intact. The interstitial gland is not only not injured, but seems to hypertrophy. Therefore the effect produced by röntgen treatment of myoma is not simply a castration; that is, a destruction of ovarian parenchyma. If we ascribe an internal secretion to the interstitial gland, it may be assumed that it vicariously takes over the function of the follicular system of the ovary. This would explain the fact that the symptoms of the menopause are so much less severe after röntgen castration than after operation. This, however, is only hypothetical as there has been no experimental demonstration that the interstitial gland has an internal secretion.

The chief change found in the endometrium is a sclerosis of the blood-vessels. It is questionable whether this is due to the rays, because some authors have found sclerosis after operation and Pankow found a physiological sclerosis during menstruation.

Recurrences after treatment cannot be absolutely prevented, because with the present technique the physician cannot be certain of having destroyed all the follicles. Recurrences are due to the survival of some of the follicles. A. Goss.

Neisser, A.: Etiology of Diseases of the Adnexa (Zur Frage der Ätiologie der Adnexerkrankungen). *Med. Klin.*, Berl., 1915, xi, 511.

In all cases of diseases of the adnexa occurring in young married women where there is a history of gonorrhœa in the husband it has been assumed that the gonococcus was the cause of the disease, even if no gonococci could be demonstrated in the man's secretions at the time. Neisser protests against this assumption, on the ground that it is not justified and that it often causes unhappiness and divorce in cases where it is possible that other bacteria may have caused the disease. He urges a more thorough study of the urethral and vaginal flora by both

gynecologists and urologists in order to settle the question of the origin of these conditions. To assume that they are all gonorrhœal may also lead to mistaken specific treatment with gonorrhœal vaccines. He believes that the failure of gonococcus vaccine in many cases is due to this cause.

If an effective specific therapy is devised the bacterium causing the disease must be isolated in each case. Orłowsky has recently asserted that the urethral secretions after gonorrhœa, even when they do not contain gonococci, contain a gonococcus toxin that may produce a cervical catarrh. Neisser holds that there is no evidence that this is the case. A. Goss.

Briggs, H.: The Coxalgic Pelvis. *J. Obst. & Gynec. Brit. Emp.*, 1914, xxvi, 212.

The feature of the coxalgic pelvis is its asymmetry, almost entirely due to alterations in the innominate bones, commonly the product of unilateral hip-joint disease, with ankylosis in childhood, and occasionally the cause of a severe dystocia in the adult woman at or about the full term of pregnancy.

The author's discussion is concerned chiefly with the question as to whether the type of pelvis is raised or lowered on the diseased side. Photographs of recent patients are presented, as well as one X-ray plate. Brief records of five patients are also included, all of whom had lateral tilting of the pelvis. In each the left half of the pelvis, the diseased side, was raised. In four cases right occipito-anterior and in one left occipito-anterior were recorded as the positions of the vertex presentations.

Two of the patients were delivered spontaneously; one by forceps, one by induction of labor, and one by craniotomy.

The author's conclusion is that the diseased side is raised and that the mechanism of labor is thereby favorably influenced in the moderately contracted coxalgic pelvis. CAREY CULBERTSON.

EXTERNAL GENITALIA

Zangemeister, W., and Kirstein, F.: Auto-Infection (Zur Frage der Selbstinfektion). *Arch. f. Gynäk.*, 1915, civ, 1.

This article is devoted to answering Bumm and Sigwart's argument against the existence of auto-infection from vaginal bacteria. Statistics are cited from various publications and from the authors' own examinations of vaginal secretions showing that the morbidity from puerperal fever is least in cases with no bacteria in the vagina before delivery, greater in cases with non-hæmolytic streptococci, and greatest in those with hæmolytic streptococci. A. Goss.

Wilcox, S. F.: Button Suture in Anterior Colporrhaphy. *Surg., Gynec. & Obst.*, 1915, xx, 616.

This operation is of especial use in connection with the one of plaiting the round ligaments, because it narrows and lengthens the vagina, and it also makes a thick firm line of union.

A buttonhole is made in the vaginal mucous membrane just anterior to the cervix uteri. A wide blunt dissection is made by spreading the blades of a pair of blunt scissors inserted into the opening. The vaginal mucous membrane is then split from the cervix to the base of the urethra. Ordinary pearl buttons are threaded on a double thread of ten-day catgut and are then passed across the wound from the base of one flap to the other. From four to six button sutures may be required.

The free ends of the threads are then tied over the buttons and the bases of the flaps drawn together, but not too tightly. There are then two broad flaps, which are trimmed down to a quarter of an inch above the buttons and the edges whipped together with catgut. No sutures require removal and the buttons come away in about ten days.

MISCELLANEOUS

Burnam, C. F.: A Brief Outline of the Status of Radium Therapeutics. *Bull. Johns Hopkins Hosp.*, 1915, xxvi, 190.

This paper summarizes the experience gained in the last eight years in the treatment of nearly 1,300 cases at the private hospital of Howard A. Kelly, Baltimore. The marked selective tendency of radium in picking out the pathological cells and leaving the normal tissues unaffected is explained on the supposition that the normal cells have the advantage of protective body fluids. This is seen in the different reactions which are sometimes produced in the same kind of tumor under exactly the same radiation in different individuals. Both β - and γ -rays are used in surface or near-surface applications, while γ -rays alone are employed in the treatment of deep-seated processes.

The results reported may be briefly summarized: Cures were obtained in 95 per cent of fibroid tumors of the uterus, in all cases of pruritis and kraurosis vulvæ, lupus vulgaris, rhynophyma, lupus erythematosus, acne rosacea, birthmarks of the port-wine, the angiomas, the pigmented, and hairy mole types, macrocheilia, and macroglossia. One colloid carcinoma of the thyroid was cured. Cures are also reported for papillary and basal-cell carcinomata of the larynx, sarcomata of the neck of the small round-cell and angiomatous type, skin sarcomata including melanotic sarcomata and basal-cell epitheliomata of the rodent ulcer variety. Radium was found to have a remarkable action in controlling excessive uterine hæmorrhage. Improvement was noted in cases with inoperable and recurrent carcinomata of the cervix uteri and of the vagina, with metastases from cancer of the body of the uterus, the cervix, and vagina, with papilloma and papillary carcinoma of the bladder, with tubercular and other chronic ulcers, with multiple polyposis of the rectum, with mediastinal tumor, with tumors of the breast and the metastases of such, with colloid and exophthalmic goiters, with basal-cell epitheliomata and with sarcomata of the tonsil, with Hodg-

kin's disease, and with tubercular glands of the neck. Single cases with sarcoma of the kidney, enlargement of the spleen, and benign hypertrophy of the prostate were benefited. No improvement was noted in 5 per cent of fibroids of the uterus, in squamous-cell carcinomata of the bladder, in mucous membrane cancers of the mouth, with the exception of the lip epitheliomata, and in spinous-cell cancer of the skin.

The author states in conclusion that treatment with radium is indicated in benign growths preliminary to surgical intervention, in all inoperable malignant growths, particularly sarcomata, and in the operable malignancies where an operation will cause great disfigurement. Surgical methods and radium should be combined in the treatment of operable malignant growths. No one type of tumor is curable in all cases and some types respond to the treatment in only a small percentage of cases. When used intelligently, in connection with other known methods of treatment, radium is a valuable therapeutic agent.

FRANK HINMAN.

Corley, K. C.: Sacro-Iliac Strain. *Am. J. Obst.*, N. Y., 1915, lxxi, 595.

The author finds that rest is of value but is not sufficient to effect a cure. The first step in his treatment of this condition is to apply a dressing of adhesive plaster. The adhesive plaster is cut into strips about two inches wide and long enough to reach from just posterior to the anteroposterior median line about on a level with the iliac crest, downward across the back, just posterior to the anteroposterior median line at a level of the great trochanter of the femur. It is important that the strips do not extend anterior to the anteroposterior median line for the reason that great discomfort is attended upon the drawing across the abdomen.

In applying the strips have the patient prone on a flat hard bed. Securely attach one end and having some one hold it, grasp the free end with the right hand pulling forcibly, making counterpressure with the left hand against the ilium, at the same time bringing the free end of the plaster in contact with the skin. This is done alternately from side to side, each strip overlapping the preceding one by one-half. When a patient is relieved from pain and disability by such a dressing the diagnosis is clear and arrangements should be made for some form of permanent dressing. In a series of 193 cases about 20 per cent were associated with pregnancy.

C. H. DAVIS.

Fothergill, W. E.: Anterior Colporrhaphy and Amputation of the Cervix Combined as a Single Operation for Use in the Treatment of Genital Prolapse. *Am. J. Surg.*, 1915, xxix, 161.

In prolapsus the two lateral pedicles of the uterus are elongated so that the cervix drops forward and downward, the body of the uterus passing backward into a position of retroversion. By combining the operation of anterior colporrhaphy and amputation of the cervix with the union of the

lateral pedicles in front of the stump, the cervix is held posterior and the cystocele is cured.

Instead of the oval denudation of the anterior vaginal wall, the author advocates removing a triangular flap of mucous membrane. The apex of the triangle is at a point just behind the urethral orifice and the base is posterior to the cervix at the point of junction of the cervix with the posterior vaginal wall. Its lateral extremities are about one-half inch from the junction of the cervix and vaginal wall.

He first outlines this triangle by incising the mucous membrane. Following this the anterior wall is denuded from the apex backward, leaving the mucous membrane attached to the cervix. The cervix is then amputated and the specimen thus removed shows the above described triangle with the amputated cervix in the middle of its base.

In closing, the first suture passes posteriorly through the cervical canal and is brought out in the mid-line of the posterior vaginal wall. After trying this, sutures are inserted in a similar manner on each side until the stump of the cervix is covered and the wound edges approach each other in the mid-line. The sutures must be tied with the fingers in the vagina, as the edges of the wound will not come together unless the uterus is well within the pelvis. The anterior wall wound is closed by interrupted catgut sutures.

Following this operation an overcorrecting perineorrhaphy is not required, and the author advises one that will admit a large finger easily when all of the sutures have been inserted.

Besides combining two operations in one, the author finds that it gives results superior to those previously secured. The operation stands the test of parturition without recurrence of prolapse. For one having some experience with the procedure, it is not only quicker but is more easily done than the usual amputation of the cervix followed by colporrhaphy.

A. C. BECK.

Aschheim, S., and Meidner, S.: Intensive Mesothorium Treatment of Gynecological Carcinomata (Erfahrungen mit intensiver Mesothorbestrahlung bei gynäkologischen Karzinomen). *Ztschr. f. Geburtsh. u. Gynäk.*, 1915, lxxvii, 82.

Aschheim and Meidner give detailed case histories of 17 cases of gynecological carcinomata, principally of the uterus, but including one of chorio-epithelioma and a few vaginal cancers. They had about 140 grams of radio-active material, radium, and mesothorium. It was enclosed in glass tubes lined with silver. For filters they used lead 1 to 3 mm. thick. The material was inserted in the vagina or cervix and left from a few hours to a day. Intervals of one or several days were left between treatments.

Six of the patients died in the hospital. Five of them have been lost track of. They left the hospital, some of them improved, some of them not improved, but from their condition it is probable that they have since succumbed to the disease. Four patients remained under observation for a considerable period. One of them returned to the hospital later in worse condition than when she left, one died half a year after dismissal, one later after a total vaginal extirpation. The other showed brilliant subjective and objective improvement, but after six months there are signs of recurrence. Two are still under treatment; one of them shows recurrent nodules, the other is still free from recurrence.

Of the 14 advanced cases, 8 of which were recurrences, only two were benefited. Of the 6 cases that had not been operated upon 3 showed considerable improvement; the non-operated cases seem to react better than the recurrences.

The authors conclude that in inoperable carcinomata radiotherapy is an excellent palliative treatment; operation is still indicated in operative cases. Two of their cases which were still operable insisted on radiotherapy. Both died shortly. They believe that radiotherapy as a preliminary to operation is inadvisable and may even be injurious.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Swearingen, M.: Placenta Prævia and Its Treatment. *Texas St. J. Med.*, 1915, xi, 13.

The author states that this condition has occurred once in every 125 labors in his own practice. According to the most accurately compiled statistics this condition occurs about once in 1,200 labors.

The general management of such cases should be as follows: Send for an assistant to give an anæsthetic; prepare yourself and patient as for a surgical operation, always using sterile gloves. The cervix should be dilated by means of the finger or a Goodell dilator until sufficiently open to admit two fingers. A sterile dilatable rubber bag should be introduced, first rupturing the membranes or making a rent in the placenta if a central insertion is to be dealt with. The bag will act as a tampon and also as a means of dilating the cervix. This method the author believes will give the best results. The use of the iodoform pack is attended with danger of infection and it may give rise to a false sense of security.

When the mother is in a good condition and it is certain that the child is viable he advises complete rapid manual dilatation; while this is being done, firm but gentle pressure should be made upon the fundus of the uterus to keep the head down against the lower uterine segment; one ccm. of pituitrin may be given at this time. This procedure should be followed with bipolar version or, if the head is well down, a forceps extraction may be done. During the third stage, if there is no hæmorrhage the placenta may be left until it is expelled into the vagina, but when the bleeding is profuse, Credé's method should be resorted to at once; if this is not effective the placenta should be removed manually. In a large number of cases the continued oozing from the uterus will necessitate the introduction of sterile gauze into the uterus and the use of a vaginal tampon.

W. D. PHILLIPS.

Walther: Miscarriage with Prolonged Retention of the Placenta (Zur Kasuistik der Fehlgeburt, mit besonderer Berücksichtigung langdauernder Placenterratention). *Med. Klin.*, Berl., 1915, xi, 540.

Walther discusses miscarriage during the second third of pregnancy with retention of the placenta. During the first third the ovum is generally discharged *in toto*. Many physicians do not appreciate the dangers of retention in these cases and use the expectant treatment. There is, however, great danger of ascending infection and hæmorrhage, and it is just as important to see that the placenta is expelled promptly, within two hours after delivery,

as it is in cases delivered at term. If this does not occur spontaneously active measures should be taken to bring it about.

Five cases are described in which no active treatment was given. In one case there was sudden and serious hæmorrhage which recurred several times; in others there was constant loss of blood, and in still others putrid and septic infection. In order to know whether any of the placenta has been retained it is necessary to know the relative sizes of the placenta and foetus at different ages. The average size of the placenta in the fifth month is 10 cm. by 12 cm. and it is 1 to 1.5 cm. thick; in the sixth and seventh months it is 12 cm. by 13 cm. and 2 cm. thick. Often, however, the physician is not called until the part of the placenta that was discharged has been disposed of.

The best thing to use to stimulate contractions is quinine. This has recently been displaced to a great extent by hypophysis preparations, but Walther has found that it acts more promptly than the latter, especially in premature delivery. He describes two cases in which the placenta was promptly discharged after quinine, after having been retained for twelve hours. Ergot promotes retention by causing the cervix to contract. An attempt is first made to deliver the placenta by Credé's method, which, if not successful, is repeated under anæsthesia. If there is much hæmorrhage the uterus can be compressed from without and by two fingers introduced into the posterior cul-de-sac of the vagina.

In cases where the retention has persisted for a long time and there is hæmorrhage or fever it is advisable to call a skilled consultant, for the removal of an attached placenta with the cervix closed up requires great skill. The cervix should be dilated with a tent until the finger can be introduced and the placenta then loosened with the finger. If this fails an abortion forceps can be introduced till it reaches the lower pole of the placenta, or as a last resort a large blunt curette may be used. A small curette should never be used, for the blood-vessels from the uterus to the placenta may be opened and severe hæmorrhage follow; there is, moreover, the danger of perforation with a small curette. The cervix should never be abruptly dilated.

A. Goss.

Taylor, H. C.: Ectopic Gestation. *N. Y. M. J.*, 1915, ci, 1107.

Forty-six cases are reported as occurring in the Roosevelt Hospital, New York, from January 1, 1909, to December 31, 1914; 33 had ruptured; 13 were unruptured. In active bleeding the patient

is usually operated upon at once. Where the diagnosis is uncertain or where there is no active bleeding, operation is delayed until the patient's condition is satisfactory. Twenty-five per cent of the cases had been sterile for at least five years. Seventy-six per cent gave a history of previous tubal inflammation. The hæmoglobin and blood count depended on the suddenness, the amount, and the recent occurrence of the hæmorrhage.

Three indications for opening the abdomen through the posterior vaginal wall are given: (1) for diagnosis; (2) for small pelvic hæmatocele; (3) for septic infection of the hæmatocele. In other conditions an abdominal operation is performed. The mortality of the series was 8.7 per cent. D. H. BOYD.

Rabinovitz, M.: The Clinical Significance of Amenorrhœa in the Diagnosis of Tubal Pregnancy. *Am. J. Obst.*, N. Y., 1915, lxxi, 766.

The author calls attention to the fact that ectopic pregnancy may be present without amenorrhœa. After giving the history of four cases he gives the following résumé:

Each of the cases demonstrates the clinical fact that the history of skipping a menstrual period is not an essential diagnostic factor in all cases of tubal gestation. In the cases quoted, the symptoms of disturbed gestation have set in immediately before or just about the time when the next menstrual period was due, so that the patient could not assuredly state that she did not "skip" a menstrual period. It behooves us, therefore, to keep constantly in mind that irregular uterine bleeding occurring immediately before or about the expected menstrual period, in conjunction with other well-known classical symptoms, is just as strongly suggestive of extra-uterine pregnancy as is the bleeding that takes place after the missing of one period. This exception if properly interpreted and tempered with mature clinical judgment will frequently prove the rule and will help to lessen diagnostic errors in extra-uterine pregnancy. C. H. DAVIS.

Carstens, J. H.: The Conservative vs. Radical Treatment of Eclampsia. *Lancet-Clin.*, 1915, cxiii, 541.

Carstens reviews the etiology of eclampsia, considering it due to some form of placental toxæmia. Great stress is laid upon the diagnostic value of blood-pressure variations and the treatment is based largely upon these findings.

Should symptoms of toxæmia develop, the use of carefully restricted diet and the removal of the patient to a hospital is advised.

If convulsions occur, induction of labor should be practiced if the case is mild in type, while in serious attacks immediate delivery should be instituted by the so-called vaginal cæsarean section if the patient is not beyond the seventh month of pregnancy. At full term, and especially in primiparæ, abdominal cæsarean section should be the operation of choice. EDWARD A. SCHUMANN.

Byers, J.: The Treatment of the Toxæmias of Later Pregnancy. *Brit. M. J.*, 1915, i, 877.

Byers cites three severe cases of toxæmia of later pregnancy (after the sixth month) adding his treatment. He admits his inability to name the causative toxin and the incidence of its occurrence, yet accepts the toxin theory, and treats it by the eliminative method.

He offers the following suggestions as to treatment.

1. Avoid the formation of toxins, starve the patient, give gastric and intestinal lavage of sodium bicarbonate.

2. To eliminate toxins continue frequent stomach and intestinal lavage. Thoroughly empty the bowels, use saline infusions and kidney poultices. Use few medicines.

3. Treat special conditions as they arise. Keep the patient warm and turned on the side. Give no warm baths or diaphoretics.

HAROLD G. GARWOOD.

Tweedy, E. H.: Etiology and Treatment of Hyperemesis and Other Forms of Pregnancy Toxæmia. *Med. Press & Circ.*, 1915, xcix, 440.

Tweedy cites a severe case of pernicious vomiting of pregnancy and its treatment. His conclusions are:

1. Food irritation is not a factor in increasing the toxæmia of pregnancy.

2. Toxæmic exacerbations may arise from the absorption of intestinal ferment, but in practice this is the exception rather than the rule, for vomiting may be induced and the eclamptic seizure start a few minutes after the ingestion of milk and before there could possibly be any manifest fermentative change.

3. The absorption of food particles during the earliest stages of their digestion must be responsible agents in hyperemesis and eclampsia.

Tweedy further suggests that since in early pregnancy a foreign albumin appears in the blood, normal antibodies are interfered with thereby; hence the early vomiting may be Nature's method of rejecting food incapable of neutralization.

HAROLD G. GARWOOD.

Bowen, W. S.: Case of Cæsarean Section in Breech Presentation. *Wash. M. Ann.*, 1915, xiv, 131.

Cæsarean section was performed on a primipara, aged 40, with normal pelvic measurements but a breech presentation. External version had been unsuccessfully attempted several times before the onset of labor. After twenty hours of labor little progress had been made; the cervical dilatation was about the size of a quarter, and the patient was becoming exhausted. Section was successful in delivering a living baby, and the mother made a good recovery. In the opinion of many leading obstetricians this course was justifiable.

D. H. BOYD.

Walls, W. K., and Shaw, W. F.: Three Cases of Rupture of Pregnant Uterus Through the Scar of a Former Cæsarean Section. *J. Obst. & Gynec. Brit. Emp.*, 1914, xxvi, 232.

The first case, a dwarf, aged 30, had been delivered by cæsarean section three times, the last in October, 1913. On November 23, 1914, when seven months' pregnant, she had sudden severe pains in the abdomen and collapsed. Upon admission to the hospital the abdomen was opened. The peritoneal cavity was filled with blood, which was oozing through the old scar in the uterus. The placenta was attached anteriorly and could be seen bulging through the spongy scar tissue. Supravaginal hysterectomy was rapidly performed, but the patient died the same evening.

The second case had had one previous cæsarean section and had arranged for a second, but symptoms of accidental hæmorrhage supervened about ten days before the appointed time. As contracted pelvis had given the indication in the first instance, the abdomen was opened at once. The old scar was long, wide, and very thin, with blood oozing from its lower end. A dead child was removed through the uterine incision and supravaginal hysterectomy performed. Microscopical sections of the uterine wall showed no degeneration to account for this weak scar. Neither the fibrous nor elastic tissues were increased in amount, nor was any histological change noted.

The third case had had one child by cæsarean section twenty months previous and was within a week of full-term pregnancy, for which cæsarean section was to be done, when sudden and severe abdominal pains occurred. She was in bed at the time, but six hours later she walked to the hospital where she collapsed. Operation showed that the old scar had opened throughout its entire length and was blocked by the placenta, which was adherent all around it. The quantity of free blood was considerable, but not as much as often occurs with ruptured ectopic gestation. The dead child was removed through the opening in the uterus without further enlargement, after which supravaginal hysterectomy was performed. Microscopical sections show an increase in the amount of fibrous and elastic tissue, but not enough to account for the accident.

CAREY CULBERTSON.

Lackner, J. E.: Serological Findings in 100 Cases, Bacteriological Findings in 50 Cases, and a Résumé of 679 Cases of Abortion at the Michael Reese Hospital. *Surg., Gynec. & Obst.*, 1915, xx, 537.

In reviewing the causes of abortion, the author shows that syphilis is an etiological factor in 4 per cent of abortions. Reviewing the literature as to the rôle syphilis plays in causing abortion, he quotes Trinchese, who claims that it has little or no influence in causing abortion during the first four months of pregnancy; two-thirds of luetic children being born in the seventh, eighth, and ninth months of pregnancy.

In 679 cases of abortion there were 4 deaths, or a mortality of .06 per cent, of which 3 were treated actively and one conservatively.

In the treatment of abortions prophylaxis is an important factor in treating the pathological condition whether local or constitutional. The treatment of incomplete abortions in the Michael Reese Hospital from 1912 to 1914 consisted in tent dilation from 8 to 24 hours, digital emptying of the uterus when possible, otherwise curettage, followed by intra-uterine irrigation of one-half per cent iodine. When the history and physical findings are those of an incomplete abortion the uterus is emptied within 24 to 36 hours after the patient enters the hospital. This is done whether or not there is any temperature. Despite the cultural findings, which in 50 cases showed the usual number of anaërobic and aërobic bacteria, the uterus should be emptied in 24 to 36 hours, as indicated by the low mortality of .06 per cent in 579 cases.

Pellissier, P.: Blood-Pressure and Viscosity of the Blood in Pernicious Vomiting and Heart-Disease During Pregnancy (De la tension artérielle, de la viscosité du sang total et de leurs rapports chez les femmes enceintes atteintes de vomissements incoercibles et de cardiopathies). *Arch. mens. d'obstél. et de gynec.*, 1915, iv, 182.

Pellissier studied the blood-pressure and viscosity of the blood in normal and pathological pregnancy. He gives detailed reports, with pressure curves, of 5 cases of pernicious vomiting, 2 of aortic insufficiency, 4 of mitral stenosis, 2 of mitral insufficiency, and 2 of other heart-diseases. He found that in normal women pregnancy and labor do not change either pressure or viscosity very much, though viscosity is slightly lowered and the pressure-curve is slightly irregular during the latter months of pregnancy. Slight or well-compensated valvular lesions do not materially affect either pressure or viscosity.

In patients with albuminuria a lowering of viscosity with an increase in pressure indicates "blocking" of the kidney. True high pressure, that is, a rise in both maximum and minimum pressures, is found in 96 per cent of the women who have œdema, with or without albuminuria, in many of those who have the so-called pregnancy albuminuria, and those who have or are threatened with eclampsia. The variations in the albuminuria and those in the blood-pressure do not run parallel, and a prognosis based on the latter is much more certain than one based on the former.

A permanent increase in blood-pressure, both maximum and minimum, with increased viscosity, indicates a very serious condition; treatment should be instituted at once to prevent convulsions. The outlook is not nearly so bad if the high pressure is accompanied by low viscosity. In prolonged vomiting a progressive fall in blood-pressure with a concomitant rise in viscosity indicates a grave prognosis. In women with heart-disease, particularly of the mitral valve, involvement of the myocardium is

indicated by irregularity in the pressure curve, lowering of the maximum pressure, and increase in the minimum. There is increase in viscosity in these cases as soon as the lesser circulation begins to suffer.

A. Goss.

Fischkin, E. A.: The Dermatoses of Pregnancy. *Illinois M. J.*, 1915, xxvii, 269.

Certain authorities regard the appearance of skin lesions during pregnancy as an evidence of toxæmia. As yet, however, the relation of the one to the other has not been definitely established. Fischkin suggests that the toxin is capable of affecting the vascular system and, in turn, producing skin changes. He details several of the more unusual lesions: impetigo herpetiformis, herpes gestationis, syphilis hæmorrhagica, atrophica cutis progressiva, circumscribed scleroderma, and erythema exudativum, which he observed in pregnant women.

J. M. SLEMONS.

LABOR AND ITS COMPLICATIONS

Eddy, I. H.: Uterine Inertia and Its Management. *Illinois M. J.*, 1915, xxvii, 369.

The various causes of uterine inertia are enumerated as follows: fatigue in overcoming a rigid cervix, faulty development of the uterine musculature, fibroids, endometritis of the interstitial type, hydramnios, twin or rapidly repeated pregnancies, faulty development of the nerve supply, emotional inhibitory nerve impulses, premature rupture of the membranes, an unusually large head, abnormal position, contracted pelvis, placenta prævia, pendulous abdomen in multiparæ, an overdistended abdomen.

In the diagnosis of uterine inertia these points should be kept in mind: The contractions are of short duration and cause the patient little discomfort, and on palpation the uterus does not possess the firmness usually felt at the fundus during a normal contraction. In cases in which the lower uterine segment is not relaxed and there is only slightly appreciable pressure exerted by the presenting part, chloral and morphine are indicated. Cases not belonging to this class, provided there are no obstructive conditions present, are given pituitary extract, which usually brings about physiological contractions.

The author has not noted any untoward effects on the mother, but cautions against its free use in cases of high blood-pressure, especially if associated with considerable sclerosis.

C. D. HAUCH.

Adair, F. L.: Occiput Posterior Positions. *Am. J. Obst.*, N. Y., 1915, lxxi, 616.

The author calls attention to the early rupture of the membranes as one of the important factors in causing delay in occiput-posterior cases. In 1,000 cases of anterior vertex presentations at the Manhattan Maternity Hospital the membranes were intact in 60 per cent at the beginning of the second

stage. In 400 occiput-posterior positions the membranes were unruptured in 43 per cent at this stage.

Because of the difficulties which may attend occiput-posterior cases, the author considers it very important to recognize them. He considers abdominal palpation the most important means, although inspection, percussion, and auscultation should be employed also.

The management of these cases is at times quite difficult, and there are five possible methods of handling them: (1) waiting for spontaneous labor; (2) assisting in maintaining flexion and furthering rotation of the head by manual methods; (3) using the vectis or forceps to bring about rotation and descent of the head; (4) podalic version; and (5) possibly cesarean section.

Occiput-posterior cases may be divided into three groups: (1) the large diameter of the head above the brim, head not engaged; (2) head in the parturient canal, but above the ischial spines; (3) head below these bony spines.

In Group 1, with membranes intact and indication for delivery, cesarean section may be employed if the cervix is not dilated, but if it is dilated the delivery may be by version. If the membranes are ruptured and the amniotic fluid drained away, the only courses are waiting, artificial dilatation of the cervix, maintaining flexion and securing rotation of the head, and lastly the use of the forceps.

In Group 2, three methods of delivery may be considered: (1) flexion and rotation of the head by manual methods; (2) delivery by forceps; (3) and lastly podalic version.

In Group 3, the cervix is usually dilated and the only methods which may be used are manual rotation and forceps.

C. H. DAVIS.

Arluck, S. S., and Girsdanksy, J.: Forceps. *N. Y. M. J.*, 1915, ci, 1053.

Cases requiring the application of forceps may be divided into two great classes: (1) those in which there exists a disproportion in size between the presenting part and the pelvis; (2) those in which no such disproportion exists. The latter group usually presents few difficulties or problems either in the matter of technique or diagnosis of indication.

The indications may be subdivided into: (1) inertia, exhaustion, cardiac disease, eclampsia, etc.; (2) dry labor, transverse or posterior portion of head, cord about neck — undiagnosed.

Pituitrin has reduced the necessity for forceps application in some of these cases.

In the cases with disproportion a thorough test of labor is advised before interference. The following factors are considered in making the test of labor: (1) parity; (2) position of head; (3) consistence of head; (4) possibility of testing engagement externally; (5) character of pain; (6) condition of cervix; (7) foetal heart; (8) condition of mother.

The use of high forceps has been discontinued in the majority of cases. In the statistics of the Jewish

Maternity Hospital from 1909 to 1915 the percentage of forceps applications has been reduced from 13.3 to 3.2.

The following conclusions are drawn:

1. The total percentage of forceps, 5.5 per cent, is very low.

2. The use of high forceps has been practically eliminated as an operative procedure, thereby materially decreasing our infant mortality.

3. Cæsarean section and pubiotomy have proved admirable substitutes for forceps, and with more experience and improved technique are continually giving better results.

4. Pituitrin has proved of extreme value in cases of dystocia due to dry labor, posterior or parietal positions, etc., where no disproportion exists.

5. In the authors' series of "twilight" cases, small compared to the grand total, the use of forceps was markedly increased from 4.5 to 9 per cent.

D. H. BOYD.

Brannan, J. W.: Observations on Twilight Sleep.

Med. Rec., 1915, lxxxvii, 715.

The following results from observation of cases of "twilight sleep" are enumerated by the author:

In Knipe's service at the Gouverneur Hospital there were 94 cases: 55 primiparæ and 39 multiparæ. In 70 cases complete amnesia was obtained; in 13 partial amnesia; in 2 there was analgesia. Nine cases were failures, 4 of these had only one injection. Low forceps were applied in 6 cases; craniotomy was performed in the case of a large child, the mother having a small pelvis and mitral stenosis. Pituitary extract was used in 3 cases, 2 of which are included in the forceps cases. Post-partum hæmorrhage occurred once; considerable excitation of the mother was noticed in 2 cases. There were no maternal deaths. There was one stillbirth, a case of moderately small pelvis, large child, and protracted labor. Two children were born asphyxiated—both lived. There were 5 cases of oligopnœa, all lived. In the above series of cases the true *Dämmerschlaf* method of Gauss was used.

At Harlem Hospital 97 cases were treated by Brodhead. In the first 46 cases the method of Siegel was employed with the following results: complete amnesia in 32 cases, partial amnesia in 6, analgesia without complete amnesia in 5; in 2 cases the drugs had no effect. The treatment was discontinued in one case after twelve hours because of cessation of pains. Of these patients, 19 were primiparæ and 27 multiparæ. The average duration of labor was six hours and twenty minutes in the primiparæ and four hours and fifteen minutes in multiparæ. Twenty-nine of the babies cried spontaneously. There was oligopnœa in 15, but all of the babies lived. Brodhead states that one of the disadvantages of the Siegel plan of treatment, in his experience, is the excitement produced in some patients.

In the second group of cases, 51 in all, only two-thirds as much scopolamine was used in the first two doses; the remaining doses of scopolamine were the same as in the Siegel method, but at longer intervals, and no more morphine was given. The results as to the mothers were fully as good as before, and the babies fared better under the small dosage. The author states that the Siegel method is now generally abandoned by advocates of twilight sleep.

At Bellevue Hospital 25 cases were treated by Edgar. Narcophine and scopolamine hydrobromide were used after the Freiburg technique. Complete amnesia was obtained in 11 cases, partial amnesia in 8; in 4 cases the results were indefinite and they were classed as failures. According to Edgar all the stages of labor were lengthened, which he considers due to the drug. It was necessary to employ forceps in only one instance. No dangerous symptoms were noticed on the part of the mothers and all of the babies lived.

W. D. PHILLIPS.

Beach, R. M.: "Twilight Sleep"; Report of One Thousand Cases. *Am. J. Obst.*, N.Y., 1915, lxxi, 727.

From his study of "*Dämmerschlaf*," the author comes to the following conclusions:

1. That "twilight sleep" is a reality and not a fad.

2. That by its applications, it will be possible for about 85 per cent of cases in which it is used to pass through a practically painless labor.

3. That it is contra-indicated in certain definite cases, especially in primary uterine inertia, markedly contracted pelvis, and the emergencies of labor which demand operative interference.

4. That it may be used in all other labors and is especially applicable to the nervous woman, the physically unfit woman, in long painful first-stage labors, in cardiac cases, etc.

5. That the women after "twilight sleep" labors are in better condition because there are less difficult forceps deliveries, less lacerations of the cervix and perineum, better milk secretion, and less nerve exhaustion. They recuperate much faster than by the old method.

6. That it does not cause insanity, as stated in the lay press, but rather tends to diminish its occurrence.

7. That by its use we will have more and better babies.

8. That its disadvantages are slight and we are learning to overcome them by a further knowledge of the method, a closer attention to detail, and perfection of technique.

9. That "twilight sleep" is a method which, to secure the best results, must be used under ideal surroundings, with the minimum dosage and administered by one who has trained himself to do the work.

C. H. DAVIS.

Mann, A. L.: Is "Twilight Sleep" to Be for Me a Blessing or a Curse? *Illinois M. J.*, 1915, xxvii, 264.

On account of the environment and the number of assistants required, if scopolamine-narcophin

seminarcosis be administered according to the Freiburg technique, the author believes that the treatment will be available to relatively few women. He estimates that 95 per cent of American practitioners will find they are not in a position to administer the treatment to the rules set down by advocates of the method. In these circumstances the author concludes that the availability of the treatment for women of all classes has been grossly overstated, especially in the lay press. He has personally witnessed the objectionable effects of these drugs in one case in which it was impossible to resuscitate the infant.

J. M. SLEMONS.

Libby, W. E.: Scopolamine and Narcophin Seminarcosis During Labor. *J. Am. M. Ass.*, 1915, lxiv, 1728.

No injurious effect on the mother was encountered in the author's experience, for cases in which complications of labor were anticipated were rejected. With this caution, and if the patient understands that some difficulty occasionally arises in reviving her child, her wish to receive scopolamine and morphine or narcophin seminarcosis during labor may be complied with. However, physicians must recognize that the method has not reached the perfection which warrants indiscriminate use. For example, even moderate degrees of pelvic contraction make it inadvisable to employ seminarcosis, for in these circumstances its effects may diminish the chances for spontaneous delivery and occasionally necessitate the performance even of major obstetric operations. Similarly, the primary inertia not infrequent in the case of elderly primiparæ constitutes a contra-indication to the use of scopolamine. For the present, therefore, it would seem advisable to employ this drug only when there is every indication that the patient will pass through a normal confinement.

An intimate knowledge of obstetrics is required if physicians wish to administer seminarcosis successfully, for sound judgment must be exercised not only in the selection of cases but also in the management of labor. The supervision of patients who are under the influence of scopolamine and an opiate requires competent assistants; for this reason, and also because the frequency of operative procedures is increased, good hospital facilities are desirable. However, such precautions do not mean that the method is impracticable and that it ought to be discarded. On the contrary, the very satisfactory results in the majority of cases provide the stimulus to secure further improvements in the method which will broaden its field of application and remove its objectionable effect upon the new-born infant.

EDWARD L. CORNELL.

Baer, J. L.: Scopolamine-Morphine Treatment in Labor. *J. Am. M. Ass.*, 1915, lxiv, 1723.

All private cases, all cases that threatened to become pathologic, and all cases that came in too soon before delivery to permit of the proper ad-

ministration of the drugs, were excluded from the series. The total number analyzed was 60. Treatment was begun with the following indications: in multiparæ, when the pains recurred every 10 minutes, and in primiparæ when the pains recurred every five minutes.

The drug used in the earlier cases was a tablet form of scopolamine put out by Sharp & Dohme and made by Merck; later a powder form of scopolamine by Merck and ampules of scopolamine from Hoffman-LaRoche, preserved with mannite, according to the formula of Straub of Freiburg, were employed in alternate cases.

The total dosages varied from one-eighth to one-quarter grain morphine and from two doses of 1/200 to nine doses of 1/150 and eleven doses of 1/200 grain scopolamine, hypodermically.

The success of the treatment is classified as follows:

	Totals	Primiparæ	Multiparæ
None.....	26	12	14
Little.....	7	6	1
Partial.....	8	4	4
Fair.....	5	4	1
Good.....	8	5	3
Complete.....	6	2	4

The prolongation of labor, the increase in the number of fetal asphyxias, the excessive thirst and intense headaches that are so distressing, the difficult control of patients and avoidance of infection by soiling the genitals, the more frequent post-partum hæmorrhages, the blurred vision, the ghastly deliriums persisting far into the puerperium, the inability to recognize the onset of the second stage unless by risk of more frequent examinations, the masking of early symptoms such as antepartum hæmorrhage, rupture of the uterus and even eclampsia, the violence and uncertainty of the whole treatment, the general bad impression given to patients who are being taught to approach the "horrors of labor" in fear and trembling, constitute so severe an arraignment of this treatment of labor cases that the author feels compelled to condemn it, leaving open the question of the merits of a single dose of morphine and scopolamine in those cases where morphine and atropine have hitherto been given.

EDWARD L. CORNELL.

Polak, J. O.: A Study of Scopolamine and Morphine Amnesia as Employed at Long Island College Hospital. *Am. J. Obst.*, N. Y., 1915, lxxi, 721.

The author believes that "twilight sleep" is particularly indicated in nervous women of the physically unfit type in their first labor. The usual obstetric interference by forceps in unprepared soft parts results in a permanent morbidity, and is the largest contributor to our collection of chronic invalids. The primipara with a border-line contraction may be carried under the scopolamine amnesia and analgesia for many hours without showing any of the classical

signs of exhaustion, and if operative delivery is indicated, either in the interests of the mother or the child, it may be accomplished with less shock and with less general anaesthesia. The conduct of labor in cardiac cases is favorably influenced by the use of "twilight sleep."

The chief contra-indications to its use are the emergency conditions which arise in obstetric practice, as precipitate labor, placenta prævia, accidental hæmorrhage, eclampsia, prolapse of the cord, primary inertia, and a dead fœtus. On the other hand it may be used as a first-stage procedure in malpositions, as the scopolamine favors the dilatation of the cervix.

The author reports 155 cases with three failures. There was no fœtal mortality. There has been no post-partum hæmorrhage. The women are in better physical condition, especially after prolonged labor, than the same class of patients after ordinary labor.

C. H. DAVIS.

Schloessing, K. E.: Scopolamine-Narcophine Anæsthesia (Twilight Sleep) in Labor. *Med. Press & Circ.*, 1915, xcix, 465.

Schloessing very clearly describes the technique and the advantages and disadvantages of scopolamine-narcophine anæsthesia—"twilight sleep"—in childbirth.

The drugs recommended and used are "scopolamine stable" and narcophine. Hyoscine, considered as chemically identical with scopolamine, does not have the same clinical effect and, therefore, should not be used.

The patient should be placed in a quiet, half-dark room. The eyes should be covered by a bandage or spectacles in which dark paper takes the place of lenses, and the ears plugged with cotton. The employment of padded doors, felt-soled shoes, and carpet-covered floors are unnecessary. Sharp or sudden noises should be eliminated as far as possible.

A time-table for the administration of the drugs is given, although the author specifically states that such a table cannot be followed absolutely because every patient does not react in the same manner. Therefore, individualization must play a very important rôle in the administration of scopolamine-narcophine anæsthesia. Wide experience is prerequisite to individualization.

The advantages claimed for this method of anæsthesia are:

1. It does not have any or but very little influence upon the activity of labor.
2. The drugs act best in the more intelligent, highly nervous, and hyperæsthetic women.
3. Hæmorrhages are no more frequent than usual.
4. Lacerations of the cervix and perineum are less common.
5. Operative deliveries can be performed as usual with perhaps a small quantity of ether anæsthesia.
6. Forceps delivery is very materially decreased.

7. The fresh, rested condition of the patient after delivery is remarkable.

8. This method is particularly well adapted to those cases complicated by heart and kidney lesions.

The disadvantages of the method are:

1. Dangers to the child—possibly a harmless oligopnoea—very slight in experienced hands.

2. Rarely occurring restlessness—so-called "delirium"—of the mother.

The method is not contra-indicated in abnormal positions or premature labors, although the author does not employ the method in these cases, because any mishap—dead baby, etc.—would immediately be laid to "twilight sleep."

A well-equipped hospital is the ideal place for the administration of "twilight sleep," although the author believes it can be given in the home if under the constant observations of a skilled obstetrician who is thoroughly familiar with the technique.

Summing up, Schloessing believes that we are, thanks to Krönig and Gauss, at last in possession of a non-dangerous anæsthesia which frees woman from the dreaded pangs of labor pains.

HARVEY B. MATTHEWS.

Andrews, C. J.: Anæsthesia and Amnesia in Childbirth. *Virg. M. Semi-Month.*, 1915, xx, 27.

The suffering incident to childbirth, the resulting retardation of labor in some instances, and subsequent profound exhaustion have been apparent to medical men for a long time and have caused them to go to some lengths to secure some method of modifying or abolishing labor-pains. Neither chloroform nor ether have been entirely satisfactory. Nitrous oxide is again on trial. Undoubtedly morphine, which has been employed for years, plays a helpful rôle in many cases. Whether or not the additional use of scopolamine will improve these results is the question to be decided. The author believes it will. His favorable opinion is based upon the results he has witnessed in some of the New York hospitals and upon two cases which he has personally treated.

J. M. SLEMONS.

Guedel, A. E.: Nitrous-Oxide Anæsthesia in Obstetrics. *J. Indiana St. M. Ass.*, 1915, viii, 113.

For the following reasons the author thinks nitrous oxide properly administered has many advantages over ether in obstetrics.

1. So far as known it is an innocuous gas and when given for a long period of time in full anæsthetic doses it seems to produce no degenerative changes in any of the body tissues and only a slight intoxication, which is extremely transitory.

2. It does not produce muscular relaxation, beyond the relaxation of normal sleep, and has no noticeable effect on the contractions of the uterus.

3. It does not reduce the hæmoglobin percentage in the blood; neither does it produce a hæmolytic nor impair in any way the normal resistance to pathogenic bacteria.

4. Its action is transitory and rapid; it is not irritating and not unpleasant to inhale; neither does it cause such disturbances as vomiting and nausea. He says that the more satisfactory results have been secured by the self-administration method; that is, with the patient holding the inhaler. As to the time of administration, he is of the opinion that it depends on the amount of suffering. He mentions two cases in which an intermittent anaesthesia was maintained over a period of 6 hours, and many cases in the neighborhood of 3; the average being from 1 to 2 hours. As the head passes over the perineum continuous anaesthesia is permitted. The greatest drawback to this anaesthesia is the cost of the gas used; a single case may consume as much as ten dollars' worth of gas in six hours' anaesthesia.

W. D. PHILLIPS.

PUERPERIUM AND ITS COMPLICATIONS

Gautiez and Tissier: Post-Partum Motor Disturbances (Troubles de motilité para-obstétricaux). *Arch. mens. d'obstét. et de gynéc.*, 1915, iv, 206.

Frequently patients, after a confinement, limp and complain of pain in the feet. There is weakness of the internal edge of the foot, pain in the foot, and decrease in the size of the calf of the leg — in short the symptoms of the painful flat-foot of adolescents. This is caused by the abnormal way in which the foot is used during the latter months of pregnancy. The abdomen is heavy and projects forward; to balance this weight the body is thrown back and the weight falls on the heels. The bones and muscles undergo an abnormal strain; the circulation is also more or less impeded by the pregnancy. The overstrained muscles undergo rapid atrophy during the enforced rest of the confinement. When the woman gets up and tries to walk in the normal way the arch has lost its elasticity and there is more or less deformity of the instep. The muscles should be treated by massage and electricity and some appliance used to raise the inner edge of the foot and throw the weight on the outer edge.

Another source of post-partum motor disturbance is overstrain or partial rupture of the tendon of the rectus during delivery. A case is described in which it was difficult to rise from a sitting position; the right rectus remained inert. A painful point was found at the site of the rupture, and the muscle remained inert to avoid arousing pain. The condition is the same as that sometimes found in the abdominal muscles of rachitic children. They are weak and flabby and the child has difficulty in learning to stand.

A. Goss.

Hüssy, P.: Importance of Anaerobic Bacteria in Puerperal Infection (Die Bedeutung der anaeroben Bakterien für die Puerperal-infektion). *Monatsschr. f. Geburtsh. u. Gynäk.*, 1915, xli, 299.

Hæmolytic and non-hæmolytic streptococci have been regarded as of such paramount importance in the causation of puerperal fever that very little

attention has been paid to other bacteria in this connection. Anaerobic streptococci were found in the vagina, however, as early as 1895, and Hüssy recently examined 49 cases of puerperal fever for anaerobic bacteria. Both lochia and blood were examined repeatedly; pure cultures were sometimes obtained from the blood but never from the lochia. Nineteen of the cases were fatal. One was a case of fulminating tetanus after criminal abortion; it is the sixty-seventh case of this kind that has been published. Death was caused by anaerobes almost as often as by hæmolytic streptococci. One case of fatal puerperal fever caused by obligate anaerobic streptococci caused Hüssy to believe in the theory of self-infection. The patient had had a rapid and normal delivery and was examined only once with gloves. The anaerobic bacteria could not have been proliferating on the outside, but must have been in the vagina.

He concludes that in all cases of puerperal fever examination should be made for anaerobic bacteria. Not all of these, however, are dangerous. The most malignant ones are tetanus bacilli, anaerobic streptococci, and staphylococci and the gas bacillus. These are fortunately found in only a comparatively small number of cases. The obligate anaerobic gas-producing bacilli that are more commonly found give a very good prognosis. Mixed infections of anaerobes and aerobic bacteria give a particularly favorable prognosis.

A. Goss.

Frank, R. T.: The Treatment of Puerperal Sepsis. *N. Y. M. J.*, 1915, ci, 726.

Frank's discussion is confined to the treatment of post-partum puerperal sepsis and his ideas may be summarized as follows:

1. Rigid ante- and post-partum asepsis and anti-sepsis.
2. Thorough examination of the patient for signs of infection during pregnancy. Treatment of the infection, if present, before labor begins.
3. Coitus and vaginal douches after seven and one-half months should not be allowed.
4. Skillful management of the labor. Meddlesome interference is strongly condemned.
5. Retained placental rests should be removed immediately after they are found to exist.
6. Lacerations should be treated immediately after labor.
7. When fever develops do not meddle. "Wait and watch." Treat symptoms as they arise.
8. Treat the general condition by rest in bed, nutritious food, cathartics, and stimulation. The high Fowler position should be maintained for drainage.
9. When local symptoms develop treat them according to the indications.
10. In case of a bacteræmia the waiting policy is equally effective.
11. In hospital cases, or those seen in consultation, where there is strong evidence of retained placenta or parts of placenta, gentle digital exploration may be permissible.

12. Late or persistent hæmorrhage, when serious, should be controlled by packing the uterus with iodoform gauze.

HARVEY B. MATTHEWS.

Dorland, W. A. N.: The Treatment of the Gestational Variety of Puerperal Eclampsia. *Illinois M. J.*, 1915, xxvii, 361.

Dorland emphasizes the importance of differentiating the nephritic from the hepatic type of eclampsia. He lays down the law that lessened urinary toxicity means increased hæmic toxicity, and increased hæmic toxicity is the direct cause of eclampsia. High arterial tension, with the resultant cerebral irritation, is the cause of the eclamptic seizure. Cases are cited to substantiate his conclusions. He offers the following advice:

1. Watch the urine, not so much for albuminuria as for decreased urinary toxicity.
2. Watch the arterial tension, and, if above 165 mm., seriously consider interference.
3. Administer fluid extract of veratrum viride to prevent the onset of eclamptic seizure.
4. If labor has not set in, abdominal cæsarean section gives the best results.
5. Attempts at forcible delivery may bring on seizure.
6. Watch the pulse and arterial tension after section and judiciously use veratrum viride.

HAROLD G. GARWOOD.

Dowd, A. F.: Alcohol Drain Treatment of Puerperal Temperature. *J. M. Soc. N. J.*, 1915, xii, 228.

This drain consists of a rubber tube the size of a stomach tube with several layers of iodoform gauze strips one inch wide over the opening. The tube and gauze are carried well up to the fundus of the uterus. The uterus is lightly packed with gauze strips and the vagina is packed more tightly. The tube is fixed to the thigh and a sterile glass funnel attached to the distal end. Two ounces of 25 to 50 per cent alcohol are introduced through the tube into the uterus at two-hour intervals. The distal end of the tube with the funnel is wrapped in a sterile towel and allowed to lie on the patient's abdomen between the treatments.

One hundred and five cases of sepsis after labor were treated by this method. Of these, 85 recovered and 20 died. Of the fatal cases, 14 were highly unfavorable from the beginning, as they came under treatment late or were practically moribund before treatment was begun. Six deaths occurred, although the drain was employed early and persistently. The average duration of treatment was twelve days, the shortest six days, the longest forty-five.

Usually the temperature began to decline within sixteen hours after the introduction of the drain with a corresponding fall in pulse-rate and marked improvement in the general condition. In the average case the drain was allowed to remain for forty-eight hours, was then removed and reinserted, following uterine douche. If there was general

improvement in the patient's condition the drain was left to expel itself. It is advised if this treatment is instituted to begin within twenty-four to thirty-six hours after the diagnosis seems probable.

It is claimed that alcohol meets the requirements in these cases of profound toxæmia, usually the result of wound infection, because it is a powerful germicide which penetrates deeply. It destroys the organisms, diminishes their infective power at the seat of primary infection, produces a local hyperæmia and leucocytes, thus minimizing absorption.

C. D. HAUCH.

Brinkley, A. S.: The Pryor Method of Treatment for Puerperal Septicæmia. *Virg. M. Semi-Month.*, 1915, xx, 10.

The author believes that of all the methods advised for the treatment of puerperal septicæmia that of Pryor is the best.

After a short description of the lymphatic supply of the uterus, there follows a detailed description of the Pryor method as carried out by the author. This consists essentially in swabbing the vagina with a 5 per cent tincture of iodine in alcohol, removing the contents of the uterus with a sponge holder or the finger, thorough iodination of the cavity, leaving a narrow strip of iodoform gauze in the uterus and cervix for forty-eight hours.

With this done, a cul-de-sac incision is made and the pelvis packed with iodoform gauze. The gauze is so placed behind each broad ligament and the uterus that the pelvic organs are shut off from the general peritoneal cavity. This gauze is removed in seven days and two small loose strips are inserted to promote further drainage. These are changed every few days until the wound has healed.

The general treatment is the same as that for any acute pelvic infection.

The advantages claimed for this method are:

1. All débris is removed from the cavity of the uterus.
2. The septic transudate or pus, if any, is evacuated from the pelvic cavity.
3. The dam of iodoform gauze walls off the general peritoneal cavity.
4. The iodoform gauze strips from the pelvis leading into the vagina afford natural drainage.
5. The iodoform gauze causes a plastic exudate to be thrown out which seals up the lymphatic openings and prevents further spread of infection.

HARVEY B. MATTHEWS.

Schwytzer, A.: Surgical Experiences in Puerperal Sepsis. *Surg., Gynec. & Obst.*, 1915, xx, 471.

The author reports 9 cases encountered in private practice in twenty-three years: case 1, a severe purulent thrombophlebitis treated by 15 small incisions into the saphenous vein and its branches; case 2, severe sepsis, abscess in the uterine wall, and two separate intraperitoneal abscesses; treatment, drainage; case 3, intraperitoneal abscess, pyosalpinx,

suppuration in the broad ligament; treatment, excision of the tube, drainage; meningitis, followed by death; cases 4 and 5 beginning diffuse peritonitis after perforation of the uterus; case 6, large pelvic abscess; treatment, vaginal drainage; case 7, diffuse seropurulent peritonic exudate, acute salpingitis, ovarian tumor, abscess in the wall of the fundus uteri; treatment, removal of the tube and ovarian tumor, and drainage of the abscess in the uterine wall; case 8, severe infection of the placental area; purulent thrombophlebitis of the right ovarian and uterine veins; treatment, extirpation of the uterus; opening and draining of the ovarian vein extraperitoneally after stripping the peritoneum off the remainder of the abdominal wall, beginning at the median abdominal incision and ending over the right ovarian vessels; case 9, right-sided acute pyosalpinx, tubo-abdominal abscess, purulent thrombophlebitis of right ovarian vein, left-sided intra-abdominal abscess; treatment, removal of pyosalpinx, drainage of the right ovarian vein and left-sided abscess through the vagina, ligation of the left ovarian vein, abdominal drainage for the tubo-abdominal abscess.

The author believes that a definite localization of the infection usually exists, even if palpation gives little information. The cases are thus often allowed to go too far on account of fear of an all-pervading infection. The 8 recoveries out of the 9 cases, which are not selected ones but comprise all of the author's experience, tend to indicate that, notwithstanding the general infection, localized foci and processes are apt to be found, which if handled by correct surgical measures may turn the tide.

Trendelenburg's ligation of the infected veins was a truly great step ahead. In some cases opening and draining of the veins may be desirable or even necessary. The operation should not be done without opening the peritoneal cavity, and in addition the pathology of the case should be thoroughly surveyed and other measures used as necessary.

Miller, C. J.: The Surgical Treatment of Puerperal Infection. *Texas St. J. Med.*, 1915, xi, 7.

Miller states that in the past two years he has practically dispensed with intra-uterine treatment in acute septic endometritis, except in cases associated with uterine hæmorrhage. In the latter cases he controls bleeding with a pack of iodoform gauze; and he states that the retained masses are usually discharged when the gauze is removed. He believes that infection may be limited, drainage secured, and uterine contraction maintained by postural drainage, (Fowler's position), the use of ergot and pituitrin, and the use of ice-bags over the abdomen. Only after the local barriers are strong enough to resist invasion, should an attempt be made to remove retained debris.

He outlines the general routine plan of treatment followed in his obstetrical and gynecological service as follows: Patients presenting a history of puer-

peral infection are examined to determine if the infection is confined to the genital tract, to find if possible the actual lesion and whether it has already extended beyond the uterus. A blood count is made to determine the natural resistance of the patient, and cultures are made to determine whether or not bacteræmia is present. If the uterus is well contracted and the cervix closed no attempt is made to enter the uterus, even to obtain bacterial cultures. If the uterus is flabby and the os patulous, the culture smears are gathered and the finger introduced for exploration. If membranes or debris can be reached easily, they are removed; otherwise no further local treatment is attempted, except hot vaginal douches, until the acute symptoms subside. The uterus may then be emptied, if necessary, with the finger or an iodoform pack as the indications demand.

In cases of peri- and parametritis the author says the prognosis is usually good, and rest without operative interference will usually give the best results. If pus collections develop, incision through the vaginal vault or over the localized areas above Poupart's ligament is indicated.

General purulent peritonitis is a comparatively rare complication in puerperal cases, and practically all end fatally; the infection is usually streptococcic. In one case the author mentions that the pathologist reported pure pneumococcal cultures and the patient recovered after free incision of the vaginal vault. This plan of treatment and method of instituting drainage he considers very good, and mentions three cases which he thinks were probably saved by free incision of the vaginal vault.

In regard to the surgical treatment of septic thrombophlebitis he mentions the following conclusions:

1. Septic thrombophlebitis occurs oftener than was formerly suspected.
2. The mortality can be estimated to be not less than 70 per cent.
3. In many cases the process can be arrested by ligation of the involved veins.
4. In chronic cases the diagnosis can be made with a fair degree of certainty.
5. In acute pyæmia the mortality has not been influenced by operation.

W. D. PHILLIPS.

MISCELLANEOUS

Rissmann, P.: The Influence Exerted upon Pregnancy by Dietetic and Medicinal Means, and Analyses in Regard to the Alkalinity of the Blood (Beiträge zur diätetischen und medikamentösen Beeinflussung der Schwangerschaft nebst Analysen über den Alkaligehalt des Blutes). *Frauenarzt*, 1915, No. 1.

All serologic theories, however correct they may be, are nevertheless one-sided. They do not take into consideration that there are other substances besides albumin in the blood and serum, such as fat, sugar, split products of albuminous digestion,

and numerous salts. Furthermore, they take into consideration only what shall enter the maternal organism but not what is taken from it. Thirdly, they do not take into consideration the variable conditions of the maternal organism, the mechanical disturbances of pregnancy, constipation, accidental disease, etc. The greatest objection, however, raised against the placental theories and the like is that they have not offered us anything therapeutically. On the contrary, the serum therapy did not live up to its promises and has almost generally been displaced by the injection of salt solution, as recommended by Rissmann.

Metabolism is radically changed during pregnancy. It is therefore essential in treating the toxæmias of pregnancy to depend upon the analyses of the maternal metabolism for a cue as to treatment. Analyses of the maternal metabolism during pregnancy made clear the following points:

1. There is a considerable retention of albumin. Albumin catabolism, however, shows considerable change as less urea but more ammonia, creatin ammo-acids are excreted (Rest-Stickstoff), nitrogen is constantly increased.

2. The assimilation of sugar is decreased during pregnancy. Diabetes is usually aggravated.

3. Fat metabolism is also disturbed. A hyperlipæmia exists (increase of glycerine fats and cholesterolin fats).

4. A positive metabolic balance also occurs for phosphate of calcium and magnesium.

5. The coagulability and viscosity of the total amount of blood should be increased.

6. Iron, calcium, and magnesium are more abundant in the foetal circulation than in the maternal.

7. The fixed acids of the blood are increased at the expense of the carbonic acid (acidosis).

8. In regard to the alkalies in the blood during pregnancy and the puerperium, the author makes the following statement:

During pregnancy the woman has relatively less sodium than potassium in contradistinction to the non-pregnant state. The newborn child has more sodium than the mother and less potassium. In eclamptic patients during labor both values — sodium and potassium — are higher than in the normal pregnant woman, whereas during the period of convalescence a marked rise of sodium and a decrease of potassium occurs. Nephritis also occasionally leads to sodium retention in the parturient women. The mother is influenced deleteriously by the placenta in several ways, as nutritive substances and salts are taken from her and she is burdened with the most variable products of metabolism. In addition there is the action exerted upon all the glands of the female organism (not only glands of internal secretion) by this changed metabolism. Besides there are numerous accidental causes in the maternal organism which may pervert this changed metabolism into a real metabolic disturbance, such as uræmia and diabetes. Examples are:

1. Primarily diseased organs such as the kidneys, liver, pancreas, thyroid, etc.

2. Severe compression of organs of the chest and abdominal cavity, as in hydramnion or twin pregnancy.

3. Obstinate constipation (auto-intoxication).

4. Intercurrent diseases (angina, icterus, etc.).

Even the apparently healthy pregnant woman's life is different during pregnancy, and efforts must be directed toward discovering the first signs which presage a serious disturbance of metabolism in the patient. Hence elaborate investigations of metabolism are necessary.

Rissmann recommends the following diet for the healthy pregnant woman: meats should be curtailed, the maximum for a normal woman doing her own work should be 100 to 150 gms.; alcohol, beans, coffee, tea, spices (excluding salt), should be diminished, as well as all substances containing irritants, such as horseradish, radishes, onions, celery, asparagus, parsley, etc. Meat broths, meat juices, sharp sauces, and such meats as are rich in nuclein and extractives, as game, liver, kidneys, veal, lean beef fried, should be prohibited. Not more than three eggs should be used daily. Vegetables and fruit should be plentiful, especially the green vegetables for their iron content, likewise coarse bread. Fluids should be plentiful to prevent the concentration of the blood and to promote the excretion of the nitrogen containing substances, and the alkali chloride mineral waters are best. Five small meals should be taken; all excesses should be avoided, and the bowels kept regular.

To recognize the disturbances of metabolism early, the infant welfare stations should be made also consultation stations for the pregnant. Of considerable importance are blind headaches in the presence of albumin-free but concentrated brown urine. Boiling the urine shows the presence of numerous salts, soluble, however, upon addition of acids. The urine becomes lighter then. Increased pulse-rate accompanied by general malaise is not uncommon. The disturbances of the digestive tract should be remedied early. Constipation must be remedied by all means. Auto-intoxications are possible, yes, highly probable. Gastro-intestinal disturbances may become the exciting cause of eclamptic attacks.

The author not rarely observed disturbances in the sensory and motor nerves remediable by dietetic means. He lays considerable stress upon the excretion of coloring solutions and table salt in the urine after intravenous injections of phenol-sulphonephthalein.

In regard to treatment of disturbances of metabolism, important points may be gained from the above and Rissmann emphasizes the different forms of diet. The dietetic treatment may be supplemented beneficially by medicinal treatment. In one pregnant woman with severe pruritus, vegetable diet and calcium lactate 1 gm. t. i. d. resulted in cure. Fish was permitted. Cramps in

the calves of the legs were twice successfully treated with equal parts of calcium phosphate and potassium bitartrate, the dose being the tip of a knifeful once daily. Numerous cases of severe headache were successfully combated with a vegetable diet, with some calcium added. In nephritis a vegetable diet or a diet poor in table salt, and eventually a diet poor in potassium, is of much value. In nephritis of the severe grade, premature labor was induced if the child was viable.

In itching dermatitis of pregnancy, the injection of Ringer's solution, repeated if necessary, and accompanied with regulation of the diet, has rendered excellent results. Several times the injection was refused and complete cure resulted from dietetic measures, plus the administration of salt mixtures (3 times daily 1 gm. sodium chloride, 1.5 gm. each of ferric oxide, saccharine solution, sodium bicarbonate, sodium phosphate, and calcium phosphate 4 gm.).

Pernicious vomiting during pregnancy is not due to an intoxication of pregnancy in all cases. In less than half of the cases it is due to disturbances of metabolism, a differential diagnosis from the chemical and microscopic examination of the urine and from functional tests of the kidneys. In addition, an examination for bilirubin, urobilin, and urobilinogen must be made. In a very severe case the dietetic treatment proved very successful.

According to Rissmann, eclampsia is the end-product of a true disease of metabolism parallel to uræmia and diabetic coma. He is therefore of the opinion that for its prevention it is not only necessary to regulate the sodium chloride content, but also the nitrogen content of the diet. In the severer grades of metabolism disturbances during pregnancy, the albumin of the diet should be reduced to allow the minimum requirement—about 60 to 80 gms. daily. There is no danger therefrom for mother or child. If eclampsia has developed, the medicinal subcutaneously or rectally applied therapy alone is to be considered. He favors early interruption. By waiting too long with the patient under the influence of morphine and chloral, the infant mortality rises considerably. Not all cases of eclampsia demand an interruption of pregnancy; a venesection of 500 ccm. blood is to be recommended. The injection of Ringer's solution is contra-indicated as the excretion of sodium chloride is generally disturbed. Rectally a 5 per cent solution of magnesium sulphate may be given. In habitual abortion, potassium iodide is of value.

Rissmann's conclusions may be summarized as follows:

1. As there are severe metabolic changes during every pregnancy, even the healthy pregnant woman should receive special dietetic care.

2. The fetus and placenta, as well as the maternal organism, present numerous causal factors which may convert the changes of metabolism into real disturbances of metabolism, frequently of a severe nature.

3. Although accurate chemical analyses still leave much to be cleared up, we can nevertheless state even today that by means of a rational diet, medicinal, and probably also organotherapy, we can influence the disturbances of metabolism during pregnancy very favorably.

4. By the means enumerated, we may in the great majority of cases avoid and cure the so-called toxæmias of pregnancy so that abortions and premature labors without viable children may be reduced to a minimum.

L. A. JUHNKE.

Petri, T.: Parenteral Digestion of Albumin and Its Relation to Obstetrics and Gynecology (Neue Probleme des parenteralen Eiweissabbaues in ihrer Beziehung zur Geburtshilfe und Gynäkologie). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xli, 309, 388.

Petri performed a large amount of clinical and experimental work on the formation of protective ferments in the blood against albumin, and the results of his research are given in tabulated form. He used rabbits as experimental animals. He found that proteolytic ferments are produced by the injection of the individual's own albumin as well as by foreign albumin. These ferments are not specific for the organs from which the albumin originated; that is, the same albumin produces ferments that act on placenta, muscle, kidney, lung, etc. Another new point brought out in his research is that similar ferments can be produced in the animal's blood by the artificial production of a hæmatoma. After absorption of the serum albumin from the blood effusion, ferments are formed that are capable of digesting the tissue of various organs, including the placenta. This was found to be true in the human being also; a young woman, not pregnant, crushed her finger and there was an extensive effusion of blood into the surrounding tissues. Twenty-four hours after the injury the blood showed albumin-splitting ferments, which disappeared again three weeks later after the effusion had been absorbed.

The ferments that appear during pregnancy digest not only placenta, but also other organs. Ferments are produced not only by foreign albumin but by the parenteral administration of the individual's own albumin, and they are produced not only during pregnancy but also under other pathological conditions and by natural or induced conditions in which undigested albumin passes into the circulation. Therefore, while the Abderhalden reaction will always be positive in pregnancy, it will also be positive in various other conditions. The albumin splitting ferments are probably mobilized at once after the intravenous introduction of foreign albumin, and their action persists for a certain length of time only. Petri could demonstrate ferments 15 minutes after the injection, which persisted for 48 hours; but after 5 days no trace of ferments could be demonstrated.

A. Goss.

Cornell, M. C.: The Use of Pituitrin in Obstetrical Work. *Clinique*, Chicago, 1915, xxxvi, 120.

The author is of the opinion that pituitrin if used in suitable cases is a valuable drug. She believes that many of the failures following its use might be explained by the fact that at first the drug was prepared from the whole gland, whereas more modern researches have established the fact that the posterior lobe is the one from which the drug should be made. The drug must be fresh, and alcohol should not be used in the syringe, because it tends to neutralize the drug.

The author gives the following observation in over a hundred cases in the service of Emil Vogt of Dresden: "After the rupture of the fetal membranes in the second stage of labor the effect of the drug is most pronounced; the contractions of the uterus follow each other much more rapidly and energetically, and the intervals between pains are decreased; it failed only once, in a case given very early."

To further illustrate the promptness of the action of the drug the author gives a record of 8 cases in which pituitrin was used on an average of thirty-six hours before the injection and twenty-eight minutes afterwards; in none of the cases was the dilatation greater than three fingers in diameter at the time of injection. Another use of pituitrin is in cases in which the catheter has to be used following parturition, one injection usually being sufficient. As a galactagogue he says the extract given by the mouth is fully as efficient as the hypodermic injection. Other uses are in atonic post-partum hæmorrhages, cesarean section, and placenta prævia lateralis.

W. D. PHILLIPS.

Moodie, R. L.: The Occurrence of a Nine-Millimeter Human Embryo in the Margin of a Full-Term Placenta. *Surg., Gynec. & Obst.*, 1915, xx, 561.

The embryo was found accidentally on the margin of the placenta while looking for the yolk-sac which is commonly believed to occur in this location. The object was located on the foetal surface between the chorionic and amniotic membranes and above the large marginal cotyledon, just at the base of the amniotic fold of Schultze. It was enclosed in a sac of thin, glistening tissue to which it was slightly adherent. The embryo was slightly flattened, possibly by pressure from the other foetus.

The child to which the placenta was attached was a vigorous female infant of 9 pounds, 3.5 ounces in weight at birth, apparently normal in every respect, and showed a gain at the end of the first week of 3.5 ounces. The mother, before marriage had undergone an operation for appendectomy, at which time the left ovary was removed, the fallopian tube resected, and a cyst removed from the other ovary. A bicornate uterus was not indicated. Pregnancy lasted 270 days and delivery was spontaneous, with a large amount of liquor amnii. The placenta and envelopes were normal in every respect.

The literature on superfœtation and allied topics

is very extensive and goes back to the earliest medical writings of Hippocrates and other early Greek writers, in whose writings there are numerous references to superfœtation. This subject is today, however, not well understood and is on an insecure basis, in spite of numerous contributions to the subject. The present instance therefore is not assigned to any particular phase of superfœtation but the following possibilities are suggested: (1) parthenogenesis, (2) fertilized polar bodies, (3) an embryoma, (4) undeveloped twin—due to inanition, and (5) superfœtation. All five of the possibilities are uncertain and much work must be done to place any one of them on a secure footing. Accurate clinical observations of the actual occurrence of any one of these is needed to establish the subject in a satisfactory manner.

Platt, H.: Birth Palsy. *Brit. M. J.*, 1915, i, 793.

Certain etiological factors are well established and accepted by all. In the vast majority of cases birth palsy is seen in an infant born after a prolonged and difficult labor in which there was a disproportion between the size of the child and the maternal pelvis.

Statistics available show that the injury occurs more frequently in vertex than in breech presentations, but the exact relative proportions remain to be settled in the future from a large series of cases.

There are, then, two opposing theories to explain the etiology of birth palsy.

1. Primary paralysis, due to stretching or tearing of the brachial plexus.
2. Primary joint or bone lesion, with or without secondary paralytic phenomena.

As to symptoms and signs, it is noticed that following a difficult labor in which instruments may or may not have been employed, one arm of the infant hangs limp and motionless. The position of the affected limb is characteristic, the arm hanging close by the side in full internal rotation at the shoulder, with the elbow extended, the forearm pronated, the fingers flexed, and in some cases obvious wrist-drop. For a few days the neck and shoulder may be tender, the infant resisting all efforts of examination and manipulation of the limb, usually no actual bruising or other superficial local signs of trauma being seen. If untreated, the subsequent progress of the case may be along one of three lines:

1. Rapid and complete spontaneous recovery may ensue, leaving the limb in a practically normal state.
2. There may be complete absence of recovery with persistence of a flail-joint. This is a rare sequel.
3. Considerable recovery may take place, but in an incomplete manner, leaving a residual paralysis.

This latter event is the one usually seen, so that after some weeks the arm is no longer limp but is used by the child with fair power. As time goes on in all moderate and severe cases there is an evident

lack of growth in the whole limb and shoulder girdle. The author emphasizes that there is frequently associated a posterior subluxation of the shoulder.

Brachial plexus theory. The conception of birth palsy as a primary lesion of the brachial plexus is one based on sound clinical, pathological, experimental, and operative evidence. It is generally held that the exact lesion is either a simple tearing of the nerve-sheaths or a stretching, laceration, or complete rupture of the nerve-trunks. Every degree of injury is possible, and may involve the whole plexus or be localized to one or more trunks.

It is instructive to compare and contrast the upper-arm type of infantile paralysis with obstetrical palsy. The characteristics of the former are extreme muscular atrophy, a flail shoulder-joint, but no fixed contracture or subluxation in the antero-posterior plane. In birth palsies there is usually little atrophy and flaccidity, but a fixed contracture and posterior subluxation of the joint are present. Brachial plexus injuries in the adult, on the other hand, generally show considerable muscle atrophy, and subluxations of the shoulder are rare.

Epiphyseal or joint lesion theory. In a recent contribution Vulpius reiterates his view that the essential lesion in birth palsy is a bone lesion. Paralysis he dismisses lightly as a secondary unimportant feature. The traction injury at birth produces a fracture or displacement of the upper epiphysis of the humerus, which is followed later by union in the dislocated position. Lange considers that the chief lesion is a laceration of the anterior part of the joint capsule, the healing of which produces a twist of the humerus at the shoulder-joint in the position of internal rotation, but with no dislocation.

Turner Thomas has enthusiastically supported the shoulder-joint theory, and has brought forward a new conception of the mode of production of the injury. Thomas believes that in all cases the joint capsule is damaged, and in addition, in the majority of instances, an actual subluxation is produced at the time of birth; this subluxation is difficult to

diagnose, and therefore is invariably missed in the first few weeks. The resulting scar tissue from the lacerated capsule involves the brachial plexus cords lying in close proximity to the shoulder-joint, causing paralytic phenomena which are usually slight and transient.

The violence producing this shoulder-joint injury is not traction during delivery, but pressure exerted by the bony pelvic wall on the anterior aspect of the infant's shoulder while it is still *in utero*. According to the degree of backward pressure there is either a tearing of the joint capsule or a subluxation of the joint.

The author thinks it is probable that the combination of physical signs presented in birth palsy may be produced by a pure plexus lesion, a joint lesion, or an epiphyseal displacement. The differential diagnosis in infants so young is well nigh impossible, but as the treatment is the same for all, this is not so serious. The theory that the injury is the result of pelvic compression relieves the *accoucheur*.

Treatment may be divided into three stages:

1. Simple paralysis. The arm should be abducted to 90 degrees and fixed there, flexed to a right angle at the elbow, the forearm fully supinated, and wrist and fingers hyperextended. This position of relaxation must be kept up night and day, accompanied by daily massage and passive motion. The results of operations on the plexus in children have been uniformly poor, in rare cases showing little or no recovery. In arthrodesis, tendon transplantation is as a rule preferable to an attempt at nerve-suture.

2. Internal rotation, deformity at the shoulder, anæsthesia stretching, external rotation, and abduction to be followed by the above-mentioned rest for the muscles if no subluxation is present.

3. Posterior subluxation. Manipulation under anæsthesia may suffice, but usually an open operation is necessary. A plaster-of-Paris cast is applied, fixing the limb in full external rotation with the elbow well back. Three months later, massage and manipulation are begun.

A. C. BECK.

GENITO-URINARY SURGERY

KIDNEY AND URETER

Dunn, J. S.: Neuroblastoma and Ganglioneuroma of the Suprarenal Body. *J. Pathol. & Bacteriol.*, 1915, xix, 456.

The author describes two new tumors of the nervous system, giving a brief description of the history of the case, histology of a neuroblastoma of the right suprarenal, and a case of ganglioneuroma, giving its history, macroscopic and microscopic examination, describing fully the tumor-cell, fibrillar material, malignant parts, secondary tumors, and metastatic findings. He reviews the whole field of ganglioneuromata, giving a table of the 51 cases, already described, including the author's, and three plates with thirteen figures of the two cases here cited.

In discussing the cases the author points out the facts already brought out, emphasizes their value, and presents some important points in differentiating between the new cases, at the same time noting their remarkably close resemblance.

The age incidence is cited as a factor. In 42 cases in which the age is given, 16 were in the first decade, 9 in the second, 4 in the third, 8 in the fourth, 2 in the fifth, while in 3 cases the age was over sixty.

The tumors tend to be of fairly large size, and the author considers Falks' observation as approximate; viz., that the size of the tumor is in inverse proportion to the age. No predilection is shown as to sex. The possible site of the origin of these tumor is considered by the author to be coextensive with the nervous system, and the sympathetic system particularly from the main chains and their abdominal branches.

He calls attention to the fact that, whereas the majority of these tumors are solitary, some groups consisted of as many as 160 (Bencke's case).

In presenting these two cases the author emphasizes two important and significant facts. First, the occurrence of lymphocyte-like cells along with the ganglion cells, which were accompanied by a peculiar form of fibrillar material differing from mature nerve-fibers being arranged in rosette forms, in parts of the tumor not of a malignant character. Second, in "definitely malignant" parts of tumor, no ganglion cells are present and all cells are small; the fibrillar material being arranged in "rosettes" as above.

The author concludes that the evidence points to the conclusion that both forms of tumors are derived from residues of neuroblastic tissue which have become dislodged from their natural place in the scheme of development of the nervous tissues. Where the residual cells return to their original

embryonic form, a malignant tumor results—a neuroblastoma. The separate cells may continue to develop in a fairly normal fashion so as to produce a tumor of ganglion cells—a ganglioneuroma.

H. W. FLAGGEMEYER.

Frank, L.: Anuria Due to Unilateral Calculous Obstruction. *Surg., Gynec. & Obst.*, 1915, xx, 526.

The scope of Frank's contribution is limited to a consideration of anuria due to calculous obstruction above the bladder, and is restricted to those of a unilateral type. His observations are based on five cases.

In some experiments with reference to the results of ligation of one ureter, the observations were made: that a kidney might resume work even after six to eight weeks of obstruction of its ureter; that for a period of from two to five days, sometimes longer, after ligation (obstruction), the surrounding tissues were oedematous, the veins enlarged; that after removal of the obstruction, the urine filtered through the kidneys very rapidly (polyuria); that the unobstructed kidney became primarily intensely congested, arterial then venous, and very quickly hypertrophied.

These observations have been confirmed clinically in his cases of calculous obstruction, and seem to explain certain symptoms and, probably in certain instances, failure of the unobstructed kidney to functionate. Likewise, the anuria occasionally following nephrectomy may, in the absence of a mechanical obstruction, find its explanation in the same causes.

In ligation experiments, the urine output of the unobstructed kidney is always at first moderately diminished, due to the altered circulation. Based upon this and the tremendous arterial congestion in the kidney, he has been led to believe that herein lies the cause of anuria in cases of unilateral calculous obstruction. This is doubtless the congestive reflex, the reflex congestion referred to by Israel in his thesis in 1888.

One of the kidneys being incapacitated, the compensatory vascular activity in the other fills the afferent vessels with a volume of blood which cannot be cared for by the efferents. This permits further over-distention from the arterial side, and leakage from the arterioles adds to the direct pressure on the veins, further lessening the escape of blood, and mechanically, as a result of this circulatory disturbance, the kidney is overwhelmed with arterial blood, thus interfering just as efficiently with urinary excretion as if the renal vein were ligated. Complete interruption of venous escape produces anuria, just as does any permanent obstruction of urinary

output from the kidney. He would, therefore, offer this circulatory disturbance as an explanation of anuria in the presence of one obstructed and a second good and normal kidney.

The anuria as a rule begins suddenly. There may be periods of polyuria with recurrence of total suppression, indicating that probably the stone has shifted or that some temporary alteration of blood-pressure has occurred in the good kidney.

In all cases the fact was noted that the compensatory work of the unobstructed kidney was always attended with decided increase in its size.

In the author's case, too, an infection of the right kidney preceded the calculous obstruction on the left, and such a case would bear out the observations to which others have previously called attention. It is further observed that obstruction may occur in a ureter which is partially dilated by invagination of the undilated portion. In this particular instance it was in the nature of an intussusception.

In discussing the symptoms of calculous anuria, it would seem that probably the most important feature in connection with anuria of this kind is the absolute absence of any disturbance in these individuals aside from lack of urinary secretion.

Realization of the possibility of the causation of anuria should lead at once to a thorough cystoscopic and radiographic examination. If this is impossible for any reason, and even if such examination be negative, with a clear history and a fair presumption as to the cause of the obstruction, operative intervention is urgently and immediately indicated.

After the stone has been located by the X-ray, it may be well to attempt the passage of the ureteral catheter. It may be possible to introduce a catheter past an obstruction due to stone and relieve the anuria as in the author's third case.

If for any reason immediate surgical intervention is not undertaken and it is impossible to pass the obstructing stone, lavage of the unobstructed kidney through the catheter may be of some benefit in reestablishing kidney secretion. In addition to this, purgation and depletion for the purpose of lowering blood-pressure may be useful in attempting to restore the flow of urine. The present methods in vogue of giving digitalis with large amounts of water and other diuretics is deprecated and condemned.

The nature of the operation to be performed is in some respects a matter of choice. Speed and expeditiousness are, however, quite necessary. Either the obstructed kidney must be nephrotomized or pelviotomy done. The latter operation is equally efficient in securing the desired results and is far less dangerous. Decapsulation of the unobstructed kidney, should such kidney not be extensively diseased, may restore the secretion to this kidney. Should any doubt exist as to which kidney or ureter is obstructed, there is no objection to doing a bilateral operation. Even bilateral nephrotomy may be desirable. It is unnecessary to remove the calculus

at the first operation. Should a single calculus be present in the lower end of the ureter, and the kidney pelvis opened, or a nephrotomy done, such a stone may be dislodged and pushed into the bladder by means of the ureteral catheter passed from above.

The reason for the operation is primarily the reestablishment of the kidney function. In no instance should surgical intervention be delayed more than forty-eight hours.

Macklem, G. de: Nephrolithiasis. *N. Y. M. J.*, 1915, ci, 944.

In an excellent article on the general subject of nephrolithiasis the author gives a very extensive and excellent differential diagnostic table which is well worth study. He reports a new method of treating hæmaturia; namely, the use of .04 grams of ematine hydrochloride. He mentions, but does not lay any particular stress upon, the value of ureteral catheterization with dilatation of the ureters and injection of oil as a means of relieving cases of ureteral stone.

The article is well summed up in the author's conclusions which are as follows:

1. Though the presence of renal calculus is most frequently noted between the ages of 20 and 30 years it is encountered at any age, uric acid infarcts having been found in the newborn.

2. The precipitation of salts in the urine is usually preceded by a catarrh of the renal tubes, brought about by a highly acid condition of the urine.

3. Calculi are more frequently encountered in the right kidney than in the left, owing possibly to its being more freely movable, and stones in the kidney and ureter of the same side, and stones in both kidneys and ureters are not infrequent.

4. Pain constitutes the most prominent symptom in the average case, the severity of which depends upon the roughness and movability of the stone, rather than upon its size.

5. The extent of the disease should never be judged by the lack or presence of symptoms of unusual severity, especially pain, as cases are very frequent, indeed, in which the subjective symptoms are few, or are replaced almost entirely by those of a reflex character, and yet an almost total destruction of the kidney may have taken place.

6. In practically every case blood-cells can be found in the urine immediately upon the cessation of the attack of colic.

7. In making a diagnosis of nephrolithiasis, it is necessary to consider several factors, and the positive determination of its existence rests, not only upon the signs presented by the suspected kidney, but also upon those presented by its fellow.

8. Cystoscopy is not indicated in this class of cases until the diagnostician is positive that the case is not one of renal tuberculosis in which the bladder has not become involved, as it occasionally gives rise to traumatism that is sufficient to act as a predisposing cause of vesical tuberculosis while the bladder was free from involvement before the examination.

9. Care should be exercised not to interpret every obstruction to the free introduction of a ureteral catheter, as a stone, as several other conditions are capable of producing an impediment.

10. It is of prime importance to make it a practice to test ureteral catheters thoroughly before using, and to see that they are washed out immediately afterward.

11. It should be a rule for the physician to see that a röntgenograph is made in every suspicious case.

12. The medical treatment of this condition can only be symptomatic and palliative, but should be given a fair trial unless the case becomes an emergency one.

V. D. LESPINASSE.

Bartlett, W.: A Method of Surgical Treatment for Floating Kidney. *J. Mo. St. M. Ass.*, 1915, xii, 152.

The author believes that successful non-operative treatment of floating kidney is often accomplished by means of a support below the organ, such as a belt or supporting pad; then, too, Nature helps by supplying a pad of fat after the rest cure.

He proposes a technique of operation used in 17 cases, 11 of which he has been able to follow up closely.

The technique of operation is as follows:

1. Make an incision which equally divides the angle formed by the last rib and the erector spinæ muscle; this should expose the fatty capsule.

2. The fatty capsule is carefully stripped from the abdominal wall behind and the kidney lifted with it out of the abdominal cavity.

3. An incision is made along the convexity of the organ, dividing the fatty capsule and the tunica propria. Both these structures, adhered together, are completely stripped back and inverted. In rare instances the tunica propria is adherent and must be left behind.

4. This rather thick-walled bag is drawn by a few catgut sutures into a ball below the kidney pedicle and anchored with the same catgut strand to the interior of the abdominal muscles at a point just below the inferior angle of the laparotomy wound.

An operator will be agreeably surprised at the difficulty experienced in returning the kidney to the abdominal cavity after such a support is formed. There is nothing to prevent such a naked kidney becoming firmly adherent to naked muscles during the succeeding two or three weeks in bed.

Of the 11 cases reported 9 were examined from one to fourteen months after operation. There were no recurrences and all were improved, while most of them were completely relieved of their former symptoms.

H. G. HAMER.

Keith, N. M.: Experimental Hydronephrosis. *Bull. Johns Hopkins Hosp.*, 1915, xxvi, 160.

The method employed in these experiments was partially to obstruct a dog's ureter on one side and

remove the opposite kidney. An ordinary elastic band, 1 mm. in thickness, was placed around the ureter just above the entrance into the bladder and held in place by a silk ligature. Tests with a water manometer on a recently sacrificed dog showed that this method produced a back pressure of about 30 cm. It had been known that a back pressure of over 45 cm. of water would very soon lead to a complete cessation of function. The particular object of the experimenter was to study renal activity over a considerable period of time following the production of a hydronephrosis. Dogs sacrificed at the end of one week, although clinically normal, showed definite hydronephroses of the remaining kidneys. All dogs thus treated developed toxic symptoms at the end of three or four weeks and died.

The following daily functional tests were made: intake of nitrogen in the food and output in the urine, phthalein test, lactose and phloridzin tests, and the estimation of the urea and total non-protein nitrogen content of the blood. The phthalein output on the third or fourth day showed a moderate diminution, and at the same time the non-protein nitrogen in the blood increased to four times the normal amount. The lactose and phloridzin tests showed only a slight variation from the normal. From the fourth day until the development of toxic symptoms, three to four weeks later, the renal function remained almost stationary. At times the urinary output of nitrogen exceeded the nitrogen in the food, and the author suggests this as an indication that the increase of the non-coagulable constituents of the blood is not only due to a renal retention, but also to a metabolic disturbance which results in an increased nitrogen catabolism. With the onset of the terminal toxic symptoms, the renal function showed severe impairment along with a rapid rise in blood nitrogen. The sacrifice of two animals within ten days of the operation, in which no evidences of infection were found on histological examination, justifies the belief that back pressure, and not infection, produced the above functional changes.

FRANK HINMAN.

Carta-Mulas, L.: Repeated Rupture of an Echinococcus Cyst of the Kidney Accompanied by Abortion (Cisti da echinococco del rene, ripetutamente svuotatasi per le vie naturali, coincidente con aborti). *Gazz. d. osp. e d. clin.*, Milano, 1915, xxxvi, 613.

Echinococcus cyst of the kidney is very unusual. Davaine reports 31 cases among 367 cases of echinococcus, Neisser 80 in 983, and Madelung 7 in 196. Prof. Pinna found 2 cases among 63 cases of echinococcus in the province of Cagliari in Italy. Manasse has collected 51 cases from the literature, in which the cyst ruptured into the kidney pelvis. Recovery followed in the majority of these cases.

The peculiarity of the case reported by Carta-Mulas lies in the fact that it has ruptured three times within the last three years, followed each

time by an abortion. The rupture of the cyst caused such severe kidney colic and muscular contraction that the musculature of the uterus was involved, bringing about the abortion. The daughter cysts were discharged in the urine, which was bloody. The blood showed that the walls of the urinary tract had been injured. The tumor which could previously be felt in the kidney region disappeared after the rupture. The pain during the discharge of the daughter cysts was terrible, simulating that of kidney stone. The patient refuses surgical treatment and if the cyst forms again the author will advise intensive neosalvarsan treatment, which has been found excellent in other cases of echinococcus cyst. A. Goss.

Geraghty, J. T.: Renal Functional Tests. *Bull. Johns Hopkins Hosp.*, 1915, xxvi, 155.

Geraghty gives an excellent summary of the absolute and relative values of renal functional tests, and emphasizes the necessity of familiarity with these values in order to apply the tests intelligently and get the maximum amount of information that is available. The value of any excretory or retention test is purely empirical. It has no sound physiological or scientific foundation, inasmuch as the physics and chemistry of the excretion of substances by the different parts of the kidney are unknown. In the average case reduction in functional power is roughly proportionate to the degree of anatomical change; but, as is well known, marked exceptions occur, and the author cites a case in which there was extreme reduction in function with very slight anatomical change. It is not possible, therefore, to correlate functional and anatomical values. This correlation and the estimation of the future loss or increase in function must rest upon a knowledge of the underlying pathologic process gained by clinical studies. Removal of the cause, renal stone for example, is sometimes possible and is followed by regeneration of function; but in case the cause of loss of function is chronic nephritis, it can be little affected. Consequently a combined functional and clinical study is essential in order to differentiate two functionally similar but clinically different conditions.

The number of tests is too large for all to be used in each case. This is not necessary, as many tests show a certain parallelism, and, furthermore, complete information is at times given by a single test. Familiarity with the reliability and significance of the findings of each test in the various types of disease is essential to a profitable selection. Of tests of excretion, phthalein furnishes more accurately all the information available, and no advantage is gained by the employment of all. Lactose, however, is useful in the very mild types of nephritis in which difficulty arises in deciding as to whether the condition is really a mild nephritis or a functional albuminuria, for it will show a delayed excretion when phthalein and tests of retention are normal. In cases where the phthalein output is low one of

the tests of retention is indicated, and the author recommends blood urea by Marshall's urease method. There is an exceptional type of nephritis showing oedema, albumin, and casts in which the function is normal, or even better than normal, for all substances except salt. However, in the vast majority of cases all the information available from functional tests will be furnished by phthalein, except where the phthalein is low, when an estimation of the blood urea gives additional information.

To the surgeon functional tests are of particular value in two types of cases: (1) in disease of the kidney secondary to obstruction of the lower urinary tract and (2) applied with ureteral catheterization in unilateral and bilateral surgical diseases. In the former class phthalein is incomparable as a control of preliminary treatment and as a guide to the most propitious time for operation, as well as in differentiating suitable and unsuitable surgical risks. The great advantage of phthalein in the second group is that when checked up with a total estimation of renal function it indicates not only the relative functional capacity of each side, but also the absolute working ability of each kidney, information not given by any other known test. A knowledge of the total phthalein excretion enables the detection of loss of function due to inhibition at the time of the ureteral catheterization rather than to renal disease.

Notwithstanding that functional tests have their limitations, the author concludes that if they are used in association with careful clinical studies and a proper regard for the information which they can furnish, a clearer conception of the renal condition will be obtained than from clinical studies alone.

FRANK HINMAN.

Kohlmann, W.: Pelvic Kidney; Pyonephrosis with Stones. *Am. J. Surg.*, 1915, xxix, 190.

In reporting a case of congenital pelvic kidney the author refers to the fact that abnormal development is more frequent in the genito-urinary system than in any other part of the body. In the diagnosis of abnormalities of the kidney the associated anomalies of the genital system are to be taken into consideration as they are developed together, and deviations from the normal are caused by defects of development in the embryonic stage. In the presence of such anomalies the existing abdominal tumor should awaken suspicion of the ectopic kidney. Diagnosis is not usually made before operation. A few cases have been reported as diagnosed before laparotomy, but the majority of cases noted are accidental findings at the time of operation or at post-mortem. In the case reported diagnosis was not made before operation.

The patient was a woman, aged 24, who had always been in good health up to six months before the present history. The onset was marked by abdominal pain accompanied by frequent micturition. The patient had never menstruated. Ex-

amination showed a well-developed woman. The abdomen was distended and very painful to the touch, especially in the pelvic region. In the region of the vagina the skin showed only a slight depression. On rectal examination the uterus and ovaries were not palpable, but the pelvic cavity was filled with a large mass so sensitive that it was not possible to make a good bimanual examination. The patient's temperature was between 100 and 102° and the urine showed pus.

At operation no uterus was found, but the ovaries were of normal size and were situated high in the abdomen. The left kidney was normal in position and size. There was no kidney on the right side. The pelvic cavity was filled with a retroperitoneal mass which proved to be a large pelvic kidney. The renal artery and vein were tied and were found to be rather low. The greatly dilated ureter was displaced to the left side by the tumor. The tumor was about the size of a foetal head and proved to be a large kidney filled with pus and stones.

G. J. THOMAS.

Geraghty, J. T., and Hinman, F.: Ureteral Calculi; Special Means of Diagnosis and Newer Methods of Intravesical Treatment. *Surg., Gynec. & Obst.*, 1915, xx, 515.

The symptoms of ureteral calculus are not diagnostic and are insufficient to definitely determine either its presence or position, except in rare instances.

While radiography is the simplest and probably the most valuable single diagnostic method for the detection of ureteral calculi, even in the most expert hands, a surprisingly large percentage, 22.4 per cent, may be undetected by it. This large percentage of failures demands the employment of supplementary methods before excluding stone.

By means of collargol ureterograms a calculus occasionally will be shown which the simple X-ray failed to reveal.

The employment of the wax-tipped catheter is by far the most accurate method for the detection of ureteral calculi, and this method should be in more general use. In 6 out of 35 cases of ureteral calculi, 20 per cent, seen in the last two years, during which time this procedure has been used, it has located a stone where repeated skiagraphs were uniformly negative. Owing to the great frequency of extra-ureteral shadows in the region of the pelvic portion of the ureter, diagnosis of ureteral stone in this position cannot be accepted without confirmatory information.

A considerable percentage of stones which enter the ureter pass spontaneously and the discovery of a small calculus is not always an indication for immediate operative interference. Unless the stone is blocking completely or producing repeated and violent colic simple manipulative methods should first be employed.

For calculi beyond the juxtavesical portion, displacement with the ureteral catheter, injection of oil, or the securing of relaxation of the ureteral wall

by using the thermocatheter may in certain cases result in the expulsion of the stone. When the stone is in the vesical portion of the ureter cystoscopic procedures should usually be successful.

A study of their cases, as well as different series reported in the literature, shows that a considerable proportion (14.3 per cent, Geraghty and Hinman; 17 of 204 cases, Jeanbrau) of ureteral calculi are arrested in the intramural portion of the ureter—a portion which can be reached readily by cystoscopic methods. These methods, therefore, have an increasing field of usefulness.

Jeanbrau, E.: Stricture of the Ureter (*Rétrécissements de l'uretère*). *J. d'uro.*, 1914, vi, 349.

Stricture of the ureter may be congenital or acquired; the acquired cases may result from traumatism, inflammation, or the passage of a stone. The pathological anatomy of the condition is discussed. Stricture of the ureter does not produce any symptoms until it blocks the flow of the urine and causes dilatation of the pelvis. This occurs late in non-infected cases, and early in infected ones.

The symptoms caused by unilateral, non-infected stricture of the ureter are the same as those of intermittent hydronephrosis from kinking of the ureter, except that in stricture the ureter dilates above the stenosis, while in hydronephrosis, the pelvis and calyces of the kidney are distended first. Therefore the pain is somewhat lower down in stricture of the ureter. Pain starting in the pelvic ureter and irradiating toward the kidney is symptomatic of stenosis of the ureter; another prominent symptom is the appearance of crises of pain almost immediately after drinking large quantities of fluid. Sometimes a large quantity of fluid is given as a means of differential diagnosis to see whether it will cause painful polyuria. Stricture of the ureter threatens the kidney on the same side with destruction by distension, suppuration, or atrophy. Retention causes congestion, and this in turn invites infection. If there is any general infection from colon bacillus, staphylococcus, influenza, or tonsillitis, the kidney is apt to become infected. If it does the only chance of cure lies in nephrectomy, if the condition of the other kidney is such as to allow it. The prognosis of stricture of the ureter is therefore serious, and an examination should always be made for it in patients who have attacks of lumbar pain. A certain diagnosis can be made only by catheterizing the ureters.

Another valuable method of diagnosis is pyelography. Furniss has published two cases of stricture of the lower part of the ureter diagnosed by means of pyelography. The indications for treatment, in cases diagnosed early, are the same as in stricture of the urethra; that is, slow and progressive dilatation. If this fails operation is necessary. Incision of the stenosis may be from within or without the ureter. If the stricture is near the pelvis of the kidney or the bladder it is best to section the ureter near the stenosis and reimplant it into the pelvis or bladder.

A. Goss.

BLADDER, URETHRA, AND PENIS

Tarnowsky, G. de: A Unique Foreign Body in the Urinary Bladder. *J. Am. M. Ass.*, 1915, lxiv, 1495.

The author's case presents unique features. The patient, a male, aged 36, was admitted to the Cook County Hospital, October 10, 1914, complaining of dysuria and of pain in the lower abdomen. He stated that on May 15, 1914, long slender pieces of solid tar had been pushed into his urethra by his fellow workmen while putting a tar coating on a roof.

After he was released the last piece inserted was removed, but from that time on he had complained of frequency of urination and pain in the lower abdomen. The stream was small, usually dribbling, with blood at the close. He had chills and fever at various intervals. Ten days after admission to the hospital a cystoscopic examination was made, but on account of small bladder capacity and the acuteness of bladder inflammation the presence of a foreign body could not be determined.

Under bladder irrigations his symptoms soon subsided and he became a helper in the hospital ward. On February 20, 1915, the patient complained of chilly sensations and severe pain in the lower abdomen. An X-ray examination was made to settle the question of foreign body in the bladder, with the report that there was a shadow present in the bladder which might indicate stone.

On February 24, 1915, a suprapubic cystotomy was made. The bladder was found to be much thickened and a mushroom-like solid mass of the consistence of putty, partially covered with calcareous deposit, was found in the bladder, its stem being embedded in the prostatic urethra for a distance of a third of an inch. The specimen, broken during removal and afterward pieced together, was the size of an English walnut and weighed 24 grams. The mass itself was black, viscid, slightly soluble in water, readily soluble in alcohol and ether. On burning it gave off the characteristic odor of tar. The patient made a good recovery. H. G. HAMER.

Hunner, G. L.: A Rare Type of Bladder Ulcer in Women. *Boston M. & S. J.*, 1915, clxxii, 660.

Hunner describes in detail a rare type of bladder ulcer in women, with a report of 8 cases from his own clinical material. The location of the ulcers varies from the vertex to the summit or the free portion of the bladder. He claims that the ulcer area may be easily overlooked, and attention may first be arrested by an area of dead white scar tissue on cystoscopic examination. In the neighborhood of this scarlike area one sees one or more areas of hypertrophy, which, on being touched, bleed and first show their character as ulcers. In other cases, or in subsequent examination of the same case, the ulcer may be well defined as a deeply red area with granulating base. The area is usually about one-half centimeter in diameter, although

two or three such ulcers at a time have been grouped in a larger inflammatory area. At certain examinations the central inflammatory area is found surrounded by a fairly wide area of oedema. At operation, after opening the bladder, the entire granulating surface may be detected easily with the bared palpating finger. One may be surprised to find that some of these inflammatory processes extend through the bladder wall and involve the peritoneum.

The diagnosis may be difficult and practically impossible without cystoscopic examination. There is usually a history of serious symptoms simulating cystitis, which may extend over a long period. There is usually microscopic pus or blood in the urine. The significant thing in the cystoscopic picture is the slowness of the lesion as compared with the long duration and the intensity of the patient's suffering.

His conclusion, therefore, is that a diagnosis of this peculiar form of bladder ulceration depends ultimately on its resistance to all ordinary forms of treatment. Microscopically, one finds in the resected portion of the bladder wall a typical picture of chronic simple ulcer.

Of the 8 cases in the author's personal experience, 5 had been treated by excision of the diseased area, with perfect results in all but 4. The remaining cases are still under local treatment, and are more or less improved. I. S. KOLL.

Ayres, W.: Radium in Cancer of the Bladder. *Radium*, 1915, v, 44.

After devoting some space to technique and discussion of the effect of radium on cancer tissue, the author reports one case of cancer of the bladder wall treated by direct applications of radium by means of a cystoscope. The cancer occurred in a man, 72 years of age, whose urine contained 3 per cent sugar and whose blood-pressure was 196. The principal symptoms were hæmaturia and increased frequency of urination. There was slight cachexia. An operation of any kind was unquestionably contra-indicated.

Radium was applied under direct vision and the gold capsule containing the radium held in direct contact with the tumor for from half an hour to an hour at each sitting. Sixty-five treatments were given at intervals of from two to four days—in all 805 milligram-hours of exposure. The first 265 milligram-hours, 10 mg. of radium being used, were of little benefit except to check the flow of blood, but 380 milligram-hours with a 20-mg.-capsule caused entire destruction of the tumor except the base. An exposure of 180-milligram-hours, using a 40-mg. capsule of radium, caused an entire disappearance of all malignant tissue, the base of the tumor being indicated by a sloughing area only.

No conclusions are attempted, but the author believes that a 40-mg. capsule is the largest which can be used with safety in the bladder by this method

and it is also the smallest from which one may expect satisfactory results. The author also believes that radium will prove to be the most effective means of checking hæmorrhage and destroying cancer tissue in the bladder that we have at our command.

The patient is reported to have died in May, 1915, of septicæmia. Up to the time of his death there had been no symptoms which would indicate a return of the growth in his bladder, but the physician in charge in April made a diagnosis of cancer of the rectum. The author believes that cross-raying—one capsule in the rectum and one on the bladder—should have been used in this case.

GENITAL ORGANS

Center, C. D.: Varicosities of the Pampiniform Plexus. *Illinois M. J.*, 1915, xxvii, 337.

Center makes an analogy of varicocele of the female with the male. Anatomically the right-angle right spermatico-renal with the oblique angle left spermatico-vena cava insertion is shown along with the like analogue of laxed muscular surroundings in the broad ligaments and the fecal and fetal (when pregnant) pressure upon the post-sigmoid portion of the venous return flow. Pampiniform varix in the male he places as occurring in 10 per cent of 300 subjects examined.

Dull aching pelvic adnæxia, lumbosacral pain, dysmenorrhœa, menorrhagia, neurasthenia, and abnormal sexual appetite, he says, are frequently due to spermatic vein block which is causing pampiniform plexus varicosities. Patients are recommended to be examined in the erect posture so that the plexus is filled. The varicocele should be found as a doughy mass in the broad ligament. Seven cases are cited, of which four had the plexuses ligatured. Of these, three cures are claimed, while the fourth showed marked improvement.

CHARLES E. BARNETT.

Valentine, J. J.: Arteriosclerosis with Relation to Prostate Operations. *N. Y. M. J.*, 1915, ci, 997.

A heart whose compensation is reasonably well established will tolerate a prostatectomy surprisingly well. Those suffering with aortic lesions do not do as well as those with mitral lesions. High arterial pressure alone is no contra-indication, as this is reduced during and following a prostatectomy. The author recommends the Milian method in estimating the coagulability of the blood, and lays particular stress upon the preliminary study consisting of a careful, thorough examination of from one week to three months' duration, as well as the pre-operative preparation consisting of confining the patient to bed with an indwelling catheter, irrigations of the bladder twice daily, lasting from four to ten days.

Seven prostatectomies were performed on patients whose blood-pressure ranged from 145 to 220 mm. None died. Two of the patients showed

severe parenchymatous nephritis, the remainder interstitial nephritis. Bronchitis was present in all cases. Five of the operations were by the suprapubic, two by the perineal route. All operations were done in one stage.

H. A. KRAUS.

Allen, C. W.: Prostatectomy Under Local Anæsthesia. *Surg., Gynec. & Obst.*, 1915, xx, 477.

Allen lays great stress on the anoci-association of Crile and Lower, and illustrates the Lower method of injecting the prostatic capsule. He urges the necessity of some sort of two-step operation in order to avoid the combined shock of surgery and the sudden relief of a chronically distended bladder with back-pressure on kidneys. He advises the Trendelenburg position which allows the bladder to distend with air and so gives a clearer field for inspection and operation. After enucleation the cavity is packed and pressure made by the suture passed through the urethra and anchored at the meatus. Allen reiterates all the points advanced as favoring the Crile-Lower anoci-association and technique.

F. R. CHARLTON.

Page, H. M.: Spinal Anæsthesia in Forty-Three Suprapubic Prostatectomies. *Lancet*, Lond., 1915, clxxxviii, 1013.

Page has found spinal anæsthesia of great assistance in many genito-urinary operations, such as malignant disease of the bladder, lithotomy, some cases of lithotripsy, extensive perineal fistulæ, etc.

The victim of enlargement of the prostate gland is not only frequently of great age, but often presents evidence of organic degeneration, such as inadequately acting renal tissue, degeneration of the vascular system, emphysema, and bronchitis. The question of anæsthesia may therefore present a serious problem both as to the immediate result and ultimate recovery.

The commonest causes of death following suprapubic prostatectomy are shock and hæmorrhage, suppression of urine, pulmonary complications, and paralytic distention of the bowel.

From his experience in the administration of both general and spinal anæsthesia for this and many other kinds of operations he has come to the following conclusions: General anæsthesia administered for prostatectomy, which during the enucleation of the gland must be deep enough to relax the abdominal muscles, does not prevent shock. If ether be the drug employed it tends rather to increase the amount of hæmorrhage and the risk of the super-vention of urinary and intestinal complications. Possibly it tends to increase preëxisting pulmonary troubles. Successful spinal anæsthesia, however, practically prevents shock, and even in cases where the spinal block is not perfect the operative shock is greatly diminished. The risk of the super-vention of suppression of urine is smaller.

The method Page uses is as follows: A previous subcutaneous injection of morphia or omnopon and atropine with or without scopolamine is given.

He injects in the second lumbar space in the middle line with the patient lying on his side, using Barker's needles and his internal cannula. The drug used in all these cases was novocaine. In the first 21 cases he used a solution weighted with mannitol.

In the cases reported no failure to obtain muscular relaxation or analgesia occurred. Anæsthesia, though slow to appear in 3 cases, was perfect eventually in 41 cases out of the 43; in the 2 others there were muscular relaxation and analgesia of the bladder. Thirty-four of the cases were operated on without any general anæsthesia. Nitrous oxide and oxygen were given to 4 cases for prevention of mental shock, the spinal anæsthesia being perfectly good. In 3 cases a little general anæsthesia was given during the skin incision, after which it was withdrawn and no more given.

In a majority of the cases the author was asked by the surgeon to give spinal anæsthesia for special reasons, such as great age, vascular degenerations, low specific gravity of urine, emphysema, and bronchitis.

H. A. MOORE.

MISCELLANEOUS

Thomson-Walker, J. W.: Recent Work in Urinary Surgery. *Practitioner*, Lond., 1915, xciv, 752.

In this paper articles by Beer, Ashcroft, and Gehrels on the treatment of papilloma of the urinary bladder with the high-frequency current are discussed. Then follows a summary of the views of Keyes on the treatment of bladder tuberculosis, secondary to inoperable prostatic or bilateral renal lesions. The action and use of urotropine as a urinary antiseptic, together with Burnam's tests for free formaldehyde in the urine, and the results of Smith's investigation of this test are also discussed.

Articles by Billington, Pardhy, Mills, Gardiner, the author, and others on the treatment of movable kidney are reviewed with the conclusion that operation is of benefit in cases of (1) intermittent hydronephrosis, (2) chronic lumbar renal pain relieved only by horizontal rest, and (3) a few cases of Glénard's disease.

A review is also given of the work of Legueu and Morel in their study of the blood of 85 patients suffering from various diseases of the prostate. These authors find that the leucocyte count varies with the nature of the disease, and that 90 per cent of the cases of adenoma showed an eosinophilia. While this was not a specific reaction, they regard its occurrence as a sign of the presence of adenoma rather than a neoplasm.

Gayet's study of Ambard's urea coefficient in a series of cases proved to him that the test is an in-

dication of the physiological state of a single function, the elimination of urea. The use of this test makes it possible to follow very closely the improvements brought about by the relief of retention, and to choose the best time for radical operation. This author regards it as surer and more reliable than the dye functional tests.

H. L. SANFORD.

Brown, L.: The Significance of Tubercle Bacilli in the Urine. *J. Am. M. Ass.*, 1915, lxiv, 886.

In the classification of his conclusions Brown says that no staining method differentiates absolutely tubercle bacilli from smegma bacilli, but that cultural methods may aid greatly. The smegma bacillus is shown to be present, when thorough cleansing of the urethra is not done, in as high as 46 per cent of the subjects. The cold-blooded tubercle, lepra, streptothrix, milk-and-butter and timothy-hay bacilli are mere possible but not probable invaders. He considers the finding of sterile pus of much value from a diagnostic standpoint. Frequency of examination in the hope of a so-called "shower" of tubercle bacilli is advocated. Petroff's practical method for precipitating the solids of the urine is considered most satisfactory.

Animal inoculation, with the production of tuberculosis, is an absolute test, but of value only when positive. A case is cited in which urine containing numbers of acid and alcohol-fast bacilli was injected into guinea pigs without producing tuberculosis. The patient developed tubercular epididymitis in spite of the guinea-pig findings. The possible solution was that the bacilli were dead. This would also be a possible solution for tubercular bacilluria with kidney free findings.

Radiography may aid in the quick detection of caseous foci when the urine contains no tubercle bacilli, where, on account of a blocked ureter, pyonephrosis or a fibrocaseous mass is present.

In spontaneous healing or autonephrectomy, Brown considers that tubercular renal obliterans is oftentimes fictitious, but refers to two cases by Renton and Elkhorn. Renton's case at post-mortem showed a tubercular kidney on one side while the other kidney had been absorbed. Elkhorn's case was operated upon, removing a mere sac which contained no tubercle bacilli.

Nephrectomy of the tubercular kidney is advised, followed by the use of tuberculin post-operative.

In genital tuberculosis he considers the appearance of the bacillus in the urine as too late to be of advantage. Nodular epididymii, vesiculæ seminales and prostate are referred to as earlier positive signs.

C. E. BARNETT.

SURGERY OF THE EYE AND EAR

EYE

Bulson, A. E., Jr.: Diagnosis and Treatment of Simple Glaucoma. *J. Indiana St. M. Ass.*, 1915, viii, 180.

The author gives the prodromal symptoms of glaucoma simplex and urges the importance of their warning. It is only when central vision fails that the patient becomes concerned, but when this stage is reached valuable time has been lost. The contracted fields, increased tension, and cupping of the disk are important aids in the diagnosis. He urges the use of the tonometer and perimeter. Various operative measures are mentioned, but the operation of Elliot is the one of choice. The author advises medicinal treatment with eserine or pilocarpine and the regulation of the habits of life before operative interference. He speaks favorably of eserine in olive oil. The source of the vague symptoms which are so often attributed to the need of changing glasses should be thoroughly examined with the ophthalmoscope, perimeter, and tonometer.

L. J. GOLDBACH.

McCaw, J. A.: The Colloidal Theory of the Pathology of Glaucoma. *Colo. Med.*, 1915, xii, 149.

McCaw presents a review of the colloidal theory of glaucoma as advanced by Fisher, and describes two series of experiments by the author.

The first experiment consisted in the introduction of equal amounts by weight of dried, pulverized blood fibrin into various solutions contained in test-tubes of the same diameter. The fibrin swelled to various heights and two conclusions were reached:

1. Fibrin swells more in the solution of any acid than it does in distilled water, but when equinormal acids are compared the amount of swelling is greater in some acids than in others.

2. The addition of any salt to an acid solution decreases the extent to which fibrin will swell in that solution. Observations on the behavior of gelatin in acid solutions show that in the main the same results are obtained as with fibrin.

The second experiment consisted in the immersion of fresh sheep eyes in acid solutions of various strengths. The eyes were then weighed at stated intervals and it was found they had absorbed great quantities of water, in two cases producing a rupture of the sclera at the equator.

The author concludes that the cause of the oedema lies in the tissues, regardless of the circulatory apparatus. He inquires into the cause of the changes which the tissues suffer to get into this state.

The work of other experimenters is reviewed and the conclusion reached that the cause of glaucoma

may well reside in the tissues of the eye, and that it becomes glaucomatous not because there is more fluid pressed into it but because through changes in itself it absorbs more water. This increased absorption of water is dependent upon the chemical alteration of the colloids in the eye, due to the accumulation of acids within the tissues.

J. MILTON GRISCOM.

Wilmer, W. H.: Sclerocorneal Trephining in Glaucoma. *South. M. J.*, 1915, viii, 419.

Wilmer records the histories of 26 glaucomatous eyes occurring in 16 individuals, all of which were operated on by the sclerocorneal trephining method of Elliot. The complete history of the corrected vision, tension, and fields of each case before and after operation is included, together with the operative and post-operative complications. The cases operated on include 9 eyes affected with secondary or chronic glaucoma, and 18 with simple glaucoma.

A review of the final results shows that vision was improved in 18 cases with no change in the remaining 8. The fields were increased in 22 cases, and remained unchanged in 4. Tonometric readings before operation averaged 43.2 mm. Hg., whereas afterward it was 12 mm. Hg. On but one case has the tension since risen above 20 mm. Hg.

The author considered the freedom from resulting astigmatism an important factor in favor of the Elliot operation, and concluded from his experience that corneoscleral trephining was the safest and most effective way of reducing excessive tension in all forms of glaucoma except the acute, where iridectomy is still the operation of choice.

J. MILTON GRISCOM.

Thompson, W. R.: Surgical Treatment of Trachoma. *Texas St. J. Med.*, 1915, x, 499.

The author urges the importance of early diagnosis and treatment for trachoma in preventing corneal infection. He lays stress upon the infectiousness and contagiousness of the disease. He advises surgical treatment, especially the expression of the conjunctiva and the resection of the tarsal cartilage, the latter being the procedure par excellence. He emphasizes the necessity of handling these cases properly and the advantage gained in doing the Heisrath-Kunt tarsal resection in chronic cases of trachoma.

L. J. GOLDBACH.

Bach, J. A.: A Modified Muscular Advancement Operation Applicable in All Cases and Easy of Execution. *Wis. M. J.*, 1915, xiii, 481.

This operation is designed to meet all possible conditions of squint, and it is claimed to be simple,

painless, and effective. The author believes that the capsule of Tenon plays a more important part in the movements of the globe than is generally admitted, and that in advancing the capsule we conserve the coöperating power between those muscles which rotate the eye ball in a given direction. Heretofore capsular advancement has failed largely because the sutures have cut through, and the author emphasizes the necessity of temporarily disabling the opposing muscle by overstretching, thus eliminating the tension on the advanced capsule. The amount of correction possible is practically unlimited and in one case a squint of 75° was corrected satisfactorily.

As to the operation itself, a semilunar strip of conjunctiva the width of the cornea and extending far enough back to fully expose the attachment of the tendon is removed. Sutures are then introduced above and below through the conjunctiva and capsule adjacent to the cornea, passed over the denuded area and then under the conjunctiva as far back as necessary, passing through the conjunctiva and capsule at the margin of the tendon and out. Before tying the sutures the opposing muscle is tenotomized and forcibly stretched by rotating the globe.

J. MILTON GRISCOM.

EAR

Beck, J. C.: The Röntgenographic Diagnosis in Otosclerosis. *Laryngoscope*, 1915, xxv, 154.

As a result of his study of stereoröntgenograms made from 27 cases in which a clinical diagnosis of otosclerosis was made, the author states that while he is not in a position to say that he can positively diagnose otosclerosis by means of a röntgenogram, he does say that there is no question that in marked progressive cases the dark areas (in the negative) in the region of the promontory of the cochlea, especially in the upper and posterior region, are markedly enlarged, which indicates a deficiency in lime salts. In normal children a similar condition is frequently seen, but there is a more general deficiency throughout all the bones of the body. In the suppurative form of middle ear disease, especially when the labyrinth is involved, areas of rarefaction or absence of bone are frequently found, but these are usually surrounded by sclerosed dense bone.

OTTO M. ROTT.

Turner, A. L.: The Clinical Aspect of Tubercular Disease of the Ear. *Proc. Roy. Soc. Med.*, 1915, viii, *Otol. Sect.*, 15.

The report is made from 51 children observed with tuberculous disease of the ear. As regards the mode of onset 92 per cent were of quiescent origin, pain being a conspicuously absent phenomenon. In 45 or 88 per cent the discharge was the first clinical sign noticed; in 2, the glands; in 1, discharge and facial paralysis were noticed first.

Facial paralysis was observed as a sign during some part of the course of the disease in 23, or 45 per cent of cases.

As regards concomitant affections of the labyrinth, in 35 cases operated upon the labyrinth was destroyed in whole or in part in 8, or 22 per cent. The outer labyrinth wall showed changes in 11 others.

Four, or 7 per cent, died of tuberculous meningitis. As regards the pathological findings in the 35 cases operated upon, the author states that definite evidence of tubercle was sought for in 17 cases, with the following result: 1 inoculation of guinea pig and development of general tuberculosis; 2 tubercle bacilli in the ear discharge; 14 giant-cell systems and caseation in the granulations. There were sequestra in 45 per cent; carious bone in 48 per cent; granulations and caseous material were common; there were no cholesteatomata. OTTO M. ROTT.

West, C. E.: Tuberculosis of the Auditory Apparatus Treated by Permanent Drainage of the Lateral Ventricle. *Proc. Roy. Soc. Med.*, 1915, viii, *Otol. Sect.*, 32.

About five months after a bilateral radical mastoid had been performed, there developed a sudden complete right hemiplegia, in an infant two and one-half years of age. There were general signs of a chronic meningitis, squint, retraction of the head, and unconsciousness.

About 3 months later, there developed convulsions, mostly right-sided, and unconsciousness. Chloroform was given, and a large temporal flap was turned down and the whole of the squama removed on the left side. When the dura mater was turned down the leptomeninges were found to be intensely oedematous and a large quantity of cerebrospinal fluid ran away. The brain bulged strongly through the opening. In the anterior part of the exposed area, over what would represent the lower part of the motor area, the color was blue and had a cystic appearance. This area was punctured and found to be an enormously dilated lateral ventricle. The fluid was allowed to run away slowly, the dura replaced but not sutured, and the scalp wound closed. Three weeks later, because of a return of the convulsions, the scalp bulge was pierced by a long needle armed with No. 3 twist silk, the needle being passed directly across the bulge and brought out through the skin some two inches beyond the edge of the old incision. Both ends of the silk were buried. One such line passed from above and behind, downward and forward emerging in the parotid region; two others led upward into the parietal region. There was an immediate and remarkable passage of fluid along the threads, producing an obvious oedema. The child's general health has been excellent since the operation, now more than three months.

OTTO M. ROTT.

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Skillern, R. H.: The External Operation of the Frontal Sinus. *Laryngoscope*, 1915, xxv, 212.

The author first discusses the indications which he divides into the absolute and the relative. Absolute indications are:

1. Where the disease has made such progress as to seriously threaten some neighboring organ, and even life itself is threatened, or there are actual cerebral and orbital complications.

2. When the subjective symptoms are severe enough to interfere with the business pursuits of the patient.

3. When severe exacerbations occur.

4. In abscess or fistula formation.

Relative indications are:

1. When the headache continues with no apparent change in the amount or consistency of the secretion.

2. When despite frequent irrigations the pus continues foetid, even though diminishing slightly in amount.

3. When the X-ray shows a large sinus with many ramifications and the disease does not appear to yield satisfactorily to internal treatments.

As to the type of operation, this is often determined by the pathological change present or the anatomical configuration of the sinus.

However, other things being equal, the author performs his modification of the Jansen operation.

The principles of this operation are to spare the anterior wall, but obtain the requisite space by resecting the superior internal portion of the margin of the orbit and the floor of the sinus, thus exposing the entire lower portion or funnel of the frontal sinus. After this has been done the usual procedures are followed, i.e., removal of diseased mucosa, the ethmoid cells, and if necessary the sphenoid is opened. The communication with the nose may be enlarged to any desired size by merely removing the orbital plate piece-meal with the bone forceps. The wound is closed and dressed in the usual manner.

OTTO M. ROTT.

Smith, H.: Case of Nasopharyngeal Sarcoma and Two Cases of Nasopharyngeal Fibromata. *Laryngoscope*, 1915, xxv, 224.

The case of nasopharyngeal sarcoma had had several hæmorrhages from the nose and temporal pain. A bluish red growth was seen to extend along the left pharyngeal wall and likewise to involve the soft palate.

The two cases of fibromata are being treated with injections of monochloroacetic acid. Four injections in one has caused a reduction in size.

The other case was first subjected to operation, the growth being snared off. Bleeding necessitated postnasal plugging for several days, at which time an otitis media with mastoiditis and other complications developed, which nearly proved fatal. In the meantime the growth had returned, so the author began giving injections of monochloroacetic acid. On December 15 the first injection of 5 minims of the saturated solution was made. Since that time injections have been made at intervals of ten days to two weeks, and the growth shows reduction in size.

OTTO M. ROTT.

Smith, H.: Blindness Incidental to External Ethmoidal Operation. *Laryngoscope*, 1915, xxv, 216.

The case reported by the author was one of bilateral polypoid degeneration of the ethmoid labyrinth. A specialist in a neighboring town while operating on the left ethmoid externally, with the patient under a general anæsthetic, had apparently lost his direction, for the instrument had perforated the perpendicular plate of septum and invaded the opposite ethmoid. Following the operation, blindness resulted in the right eye, and a diagnosis of neuritic atrophy was made. The author does not state whether the blindness was due to direct injury of the optic nerve, or whether traumatism within the region of the nerve produced a hæmorrhage of the cavernous sinus, or whether pressure followed the induration of the tissues surrounding the nerve.

The author states that the lessons to be learned from this case are:

1. Removal of polypi incident to sinusitis should be done under local anæsthesia.

2. Orientation is maintained far better when the operation is performed under local anæsthesia with the conscious assistance of the patient than when the patient is under a general anæsthetic.

3. With a patient under general anæsthesia, with the head in any other than a direct line, and with the operator working backward and upward, there is considerable danger of losing the direction.

OTTO M. ROTT.

Stein, O. J.: Report of a Case of Hypophyseal Growth Operated Through the Nose and Sphenoid. *Laryngoscope*, 1915, xxv, 159.

The author's technique was as follows: A full luncheon was allowed at 11 o'clock. Two hours later a hypodermic of 1/150 gr. scopolamine and 1/6 gr. morphine was given and repeated in one hour, at which time 1 ccm. of pituitrin was injected. About one-half hour was then consumed in applying to the nasal septum and the right middle turbinate

flake cocaine on a cotton applicator dipped in adrenalin solution. A submucous operation was performed on the septum. After reaching the rostrum, the right middle turbinate was removed. By means of Killian's extra-long bivalve nasal speculum, the mucoperichondri-periosteum flaps were held apart to allow of painstaking elevation of the thin periosteum covering the rostrum and outer wall of the sphenoid.

When sufficiently separated the membranes were easily retracted with an extra-long and wide retractor, and by using a sharp spoon or the sphenoid punch forceps introduced in the ostei the outer wall of the sphenoid was rapidly bitten out and its septum was then broken down and removed by the aid of chisel and forceps. On entering the sphenoid cavity a slight amount of bloody serous fluid was encountered. It was apparent to the touch of the probe that at places the floor of the sella was defective, as a soft mass was occasionally felt. Touching the dura caused the patient great pain. While mopping the area with a cotton wrapped probe, the probe entered the brain on the left side, immediately causing a collapse of the patient with every evidence of hæmorrhage into the brain, even to unconsciousness, paralysis, retarded breathing, slow pulse, buccal relaxation, dilated pupils, etc. An iodiform gauze strip was placed between the septal membranes to the sphenoid, and the nostrils lightly filled with cotton covered with guttapercha tissue. The patient soon recovered consciousness, with no ill-effects.

The gauze drain was removed in thirty-six hours and the two flaps held in coaptation twenty-four hours by the light pressure of rolled gutta percha tissue. The patient left the hospital seven days later, with improved vision and no headache. This report was made two months after operation and all of the symptoms had disappeared.

The advantages of this method of approach are:

1. The anæsthesia is local.
2. It is the least destructive and sacrificing to tissues.
3. It is the most aseptic, thus lessening the danger of meningitis.
4. It presents a complete aseptic closure of the wound, thus minimizing the dangers of after-infection.
5. There is no danger whatsoever to the nose, and the patient does not subsequently complain of dry throat, disagreeable nasal scabs, scars, bleeding, pain, headache, anosmia, cough, bad odor, etc.
6. No special instruments are absolutely necessary.

OTTO M. ROTT.

Thomasson, W. J.: Congenital Bony Occlusion of the Right Nasal Choana. *Laryngoscope*, 1915, XXV, 221.

A submucous resection of septum was first performed, the incision was made well back, and extended from a point high up to the floor of the nose. The tissue covering the septum was elevated

on both sides in the usual way, back to the bony occlusion. The deflected cartilage and bone were then removed, and the next step was to elevate the tissue covering this occlusion through the button-hole incision in the septum. The bony occlusion appeared to be an extension of the vomer and was adherent to the outer wall of the nasal cavity. The bone was about the thickness of the normal plate of vomer that is removed in the ordinary resection of the septum.

The next step in the operation was to get a proper flap to cover the floor of the nasal cavity. This was done by making a curved incision commencing at the floor of the nose on the outer portion of the nostril and finishing at the floor on the inner side. This flap was brought forward, and it not only made a good covering for the inferior part of the wound but also allowed a good view for the removal of the bone by the use of the chisel and biting-forceps.

OTTO M. ROTT.

Watson-Williams, P.: The Pernasal Operation for Frontal Sinus Suppuration. *Bristol Med.-Chir. J.*, 1915, xxxiii, 24.

The author divides the non-external operations for frontal sinusitis into two classes: (1) those restricted to the removal of ethmoid cells and other structures within the nasal fossa below the frontal sinus—the strictly internasal operations—and (2) those in which the operative field comprises parts entering into the formation of the sinus itself, i.e., the nasal crest and any other structures above the lower end of the ostium frontal, in which case the operation is no longer intranasal but pernasal.

The instruments to be used are: (1) a small angular punch forceps made in two sizes, (2) frontal sinus rasps for the crista nasalis, (3) guarded electric rotating burr, (4) sliding punch forceps, and (5) bougies for measuring the size of the opening.

The operative technique is as follows:

Intranasal Operation. 1. With a small angular ethmoidal forceps engage the anterior margin of the middle turbinal at its point of attachment to the outer nasal wall; cutting through this, the forceps enter [the anterior ethmoidal cells in front of the frontonasal passage.

2. Keeping to the outer side of the vertical plate of the ethmoid, clip away all the agger cells and the other anteconchal cells right up to the crista nasalis.

3. The anterior ethmoidal cells lying behind o above the frontonasal duct, including the bulla ethmoidalis are removed by the forceps as far back as may be necessary.

4. Using the larger forceps, the thicker projecting partitions of the cells are laid open and punched away.

5. The bougies are passed into the sinus, so as to gauge the size of the frontonasal channel thus formed. Usually Nos. 18 or 19 will enter, sometimes 19 to 23 or 19 to 25 are used.

In the pernasal operation, if such a large bougie will not enter, the bone corresponding to the nasal

crest may be shaved away by the sliding cutting forceps till these large sizes can be introduced, or the crest reduced first by the smaller guarded burr, or by a small-sized sharp raspatory, till the passage admits the burr or forceps. When a No. 17 enters the sinus the bony boss can be burred away first with the 4 mm. wide burr until it enters the sinus. When the frontal sinus opening lies well to the outer side and tends to guide entering probes toward the orbital roof, unless contra-indicated by skiagram, it is well to draw the sliding forceps or burr toward the front so as to enlarge the frontal ostium to the front and inward rather than toward the orbital roof outward.

With the small forceps, which now enter freely, the projecting walls of any remaining ethmoidal cells may be clipped away to render the passage freer.

The after-treatment is as follows:

1. In lavage of the sinus, first with saline solutions and weak peroxide of hydrogen and some mild antiseptic, such as colloidal or other silver preparations, iodine solutions, and so forth, and later with stronger solutions if necessary.

2. Passage of the largest bougie the canal will take comfortably, repeated at short intervals to prevent adhesions, and to insure the passage remaining widely open until the sinus has become healthier or the discharges disappear.

3. As to the use of vaccines, etc., in cases of streptococcal infection it is always safer to give 30 to 50 ccm. of polyvalent antistreptococcic serum immediately before operating, and follow with sensitized vaccines. OTTO M. ROTT.

Pegler, L. H.: Case of Synechiæ and Contraction of the Vestibules. *Proc. Roy. Soc. Med.*, 1915, viii, *Laryngol. Sect.*, 84.

As a result of a shrapnel wound, the vestibules were almost closed by adhesions, the columella thickened by inflammatory deposits, and the turbinates were so affected that nasal breathing was prevented.

The treatment consisted in paring away the cartilage and sawing off the long projections from the septum by the older methods, aided by the spoke-shave and punch. Thus it was made possible to reduce the turbinates in the usual manner, and to introduce an India-rubber tube of about two-fifths inches caliber into each nostril. These were worn for a month, but upon removing them vestibular contraction from regrowth of tissue threatened to recur. After performing two lesser operations and directing that tubes be worn for a few more weeks, a good, permanent airway was established.

OTTO M. ROTT.

Lewis, F. O.: The Normal Nasal Septum and the Pathology of Deflections. *N. Y. M. J.*, 1915, ci, 736.

Lewis calls attention to three forms of septal deviations which have been forcibly impressed upon him because of the local and constitutional symptoms they produce, the difficulty encountered

in their correction, and the good results obtained by operation. He classifies them as follows:

1. Traumatic deviation of the quadrangular cartilage, where the cartilage has been fractured or dislocated in such a manner that the convexity of the deformity obstructs one side of the nose while the free border of the cartilage partially occludes the other side, with often compensating hypertrophy of the inferior turbinate, adding much to the discomfort of both the patient and operator. To correct this condition he removes the entire cartilage, especially if there is twisting of the nasal tip.

2. This deviation is formed near the floor of the nose from just within the vestibules to the posterior nares, composed of cartilage and bone overlapping and a groove in the opposite side. This deviation impinges on the inferior turbinate and interferes with drainage and ventilation, and is often associated with eustachian catarrh and deafness.

3. A deflection of the vertical plate of the ethmoid impinging on the middle turbinate, which is often hyperplastic, giving rise to reflex symptoms, hay-fever, asthma, neuralgia, etc. The operative results in cases in this class are often brilliant.

The author closes by suggesting that if children are taught the old adage to "shut your mouth and save your life" there will be less need of nasal surgery. GEORGE M. COATES.

Graham, C. I.: Tuberculosis of Nasal Fossæ. *Proc. Roy. Soc. Med.*, 1915, viii, *Laryngol. Sect.*, 77.

The condition was manifested by a slight enlargement of the anterior end of the right inferior turbinal, which was red and granular in appearance, with a slight amount of clear, sticky discharge. The left inferior turbinal presented the same appearance, but not to such a great extent. Later there was a definite ulceration of the right vestibule involving the outer wall, the ventricle, and a small area of nasal septum. Tubercle bacilli were demonstrated. OTTO M. ROTT.

Carter, W. W.: Two Cases of Depressed Nasal Deformity Resulting from the Submucous Operation. *Med. Rec.*, 1915, lxxxvii, 813.

The author reports two cases in which the upper edge of the septum where it should lie wedged in between the two lateral cartilages had either been dislocated or removed from this position. Attention is drawn to removal of this part of the septum by means of a punch forceps and not by means of an instrument which makes traction on the rest of the septum, because this traction may dislocate the upper edge from its position between the two lateral cartilages. OTTO M. ROTT.

Decherd, H. B.: Some Results of Nose and Throat Operations in the Chronic Poisoning of the Heart, Lungs, Kidneys, Joints, etc. *South. M. J.*, 1915, viii, 424.

The author reports two cases to emphasize particularly the etiological relationship between the

tonsils and rheumatism, and the ethmoid and asthma. The conclusions he reached are:

1. To be considered so lightly both by doctors and the people, tonsillectomy is the most delicate, difficult, and dangerous operation in surgery.

2. Tonsillar hæmorrhage is the very rarest complication if the operation has been properly performed; i.e., by dissection and the cold wire snare.

3. The importance of adenoids has been greatly exaggerated, while the tonsils have received insufficient attention.

4. The most inoffensive looking tonsil is usually more dangerous than the large, red, and inflamed one.

5. Some scarring and retraction of the faucial pillars obtain after every extracapsular tonsillectomy, but the patient is cured and no untoward sensations occur in the throat.

6. "Rheumatism" embraces all disorders of bones, joints, and muscles, from "growing pains" to complete invalidism. When properly questioned few persons can be found who have not had "rheumatism" in some form. This means a focus of infection. This focus is most often in the faucial tonsil. After middle life and in old age, the ethmoids are often secondarily involved.

7. There may be some other focus of infection, but the patient will not be cured without a properly performed tonsillectomy.

8. It is far better and much easier to prevent these cases of chronic focal infection by removal of tonsils in early life, than to attempt cures in adults.

9. Removal of tonsils removes a breeding place for the endamœba of pyorrhœa alveolaris, and also removes a site for carrying diphtheria bacilli.

10. The ultimate result of chronic focal infection can be interpreted in terms of old age, arteriosclerosis, stiffness of muscles and joints, chronic inflammation of the bronchi, serous cavities of the head endocardium, kidneys, etc.

11. The use of vaccines and bacteriolytic serums has so far been rather unsatisfactory because (1) the bacteria in the distant parts may, on account of mutation, be quite different organisms from those in the original focus; (2) on account of septic emboli in the end arteries, the antibodies may not sufficiently penetrate to the diseased structures.

OTTO M. ROTT.

Beebe, H. M.: Skiagraphic Diagnosis of Nasal Accessory Sinuses. *J. Ophthalm., Otol., & Laryngol.*, 1915, xxi, 319.

As a result of his experience the author states that only the more dense liquids, so-called mucocœles, polypi, or neoplastic growths of fibrous type, are capable of shadow formation of diagnostic import. Epithelial thickenings, marked in extent, are capable of causing the same appearance. No differential findings are possible in the above conditions. Acute sinus inflammations cause little, if any, change in density. Furthermore, any changes noted in the shadow cast by the sinus contents may be duplicated by the normal sinus.

As to sinus outline, the author states that in this we have the most tangible evidence of pathological sinus change. Any of the conditions common to these areas, whether inflammatory or neoplastic, are capable of causing a change in outline which is demonstrable in the skiagraph according to the degree of the condition. This blurring or hazing of outline in the affected sinus is possible of interpretation only as a pathological change of some type. Nothing differential is possible.

There are three points of possible value that can be determined by the ray: (1) the location of, (2) the size of, (3) the presence or absence of, the various sinuses.

Summing up the question the author says:

1. Skiagraphy of accessory nasal sinuses as a diagnostic procedure has been overestimated.

2. A routine technique is essential to correct interpretations.

3. Interpretations are entirely comparative.

4. Sinus shadows in disease are simulated in normal conditions.

5. Blurring of outline is the only positive sign.

6. A skiagraph gives positive evidence as to the anatomy of the sinus.

7. Studies and interpretations in the absence of clinical findings are necessary in determining the exact value of this method.

OTTO M. ROTT.

THROAT

Graef, C.: Two Cases of Laryngeal Obstruction, and One Other. *Med. Rec.*, 1915, lxxxvii, 604.

The first case reported was that of a patient, aged 36, with gumma of the larynx. While under examination, signs of impending suffocation came on and the patient was apparently dead before a tracheotomy was performed, which, however, proved successful.

The second case was that of a child, aged 11, which was being operated upon for mastoid disease. The anæsthetist had previously reported that the nose was bleeding while the patient was being put to sleep. During the operation the patient suddenly ceased to breathe. On pulling out the tongue and wiping out blood-stained mucus, the swab caught hold of a membranous-like material which had the shape of a mould of the larynx and trachea. When this was removed the patient breathed easily. This mould proved to be blood-clot, the source of the bleeding being a spouting vessel from a septal ulcer. This bleeding had been intermittently in progress for several days and a post-nasal clot had resulted. It was this which dislodged during the operation and was inhaled into the larynx.

The third case was that of a patient, aged 32, who had previously had the middle and inferior turbinate of the right side removed under local anæsthesia. Both of the excised fragments had been inhaled into the bronchi of the right side, producing dyspnœa, for which condition the patient had consulted the author. In time both fragments were coughed up.

OTTO M. ROTT.

Milligan, W.: Subglottic (Tracheal) Growth; Removal; Recovery. *Proc. Roy. Soc. Med.*, 1915, viii, *Laryngol. Sect.*, 88.

A pedunculated growth was seen arising from the middle line of the anterior laryngeal or tracheal wall; the attachment was about one-quarter inch below the vocal cords. Both cords were normal. The growth was occasionally seen to swing up between the vocal cords. The growth was removed by the direct method.

The question arose as to the origin of the growth, whether from the larynx or trachea. In view of the fact that tracheal growths are very rare and laryngeal growths common, and the impossibility of determining definitely the tracheal origin, the growth was called a subglottic growth.

OTTO M. ROTT.

MOUTH

Raynor, F. C.: Parenchymatous Glossitis Following Resection of Septum. *Laryngoscope*, 1915, xxv, 227.

Six days following resection of the septum a patient had this inflammatory condition of the tongue without any apparent pharyngeal involvement.

The absence of any other assignable cause from the history, and examination of the mouths of some of the family and of his fiancée, lead the author to believe that the submucous operation was the causative factor.

The culture from the mouth showing streptococci; a culture from the blood showing staphylococci; the appearance of a severe facial erysipelas five days after the tongue infection; and the prompt relief of the local symptoms of the tongue by hot irrigations are the other points of interest.

OTTO M. ROTT.

Ashhurst, A. P. C.: Excision of the Tongue. *Tr. Am. Surg. Ass.*, Rochester, Minn., 1915, June.

Ashhurst described an operation which he said might be called a variant of Crespi and Bastianelli's modification of Langenbeck's method. It is designed only for early cases in which the entire operation can be completed at one sitting.

1. An incision is made from the point of the chin to the hyoid bone and thence outward in folds of the neck well below the mandible to the mastoid.

This incision is extensively undermined eccentrically and the neck dissection is begun at the limits thus exposed — beyond the midline in the submental region, and below the bifurcation of the common carotid. All anterior branches of the external carotid and corresponding veins are divided and excised along with the lymph and fat. The neck dissection is carried up to the floor of the mouth and parotid, and the neck tissues are excised in one mass, leaving only skin (not platysma) in the flap. The neck wound is swabbed with iodine, and tamponed, completing the first stage of the operation.

2. The second stage comprises excision of the tongue. The first skin incision is continued up through the lower lip in the midline, and the cheek is turned aside. The frenum, anterior pillars, and mucosa on both sides of tongue being divided, the tongue is drawn far out of the mouth and excised; the only bleeding point is the lingual artery of the side opposite to that diseased, and this is tied in the floor of the mouth.

3. To close the wound, the alveolus on the diseased side is cleared and partially excised, and the mucosa lining the cheek is sutured across the alveolar border to the stump of the tongue; the cheek is re-attached to the mandible by buried sutures, and the skin incision accurately closed, with rubber tube drainage from below the floor of the mouth.

In more extensive cases where the operation must be divided into two sittings, systematic excision of the entire sternomastoid muscle and omohyoid is advised to facilitate the dissection. The skin incision recommended is a large quadrilateral flap, with its base at the trapezius, its lower border at the clavicle, its upper border the same as that from the symphysis menti to the mastoid already described, and with its free border just to one side of the midline. The flap is composed of skin only (not platysma), and is outlined only as the dissection proceeds from the root of the neck upward. The floor of the mouth is cauterized from below before the skin-flap is replaced, and when the tongue is removed at a second operation, the floor of the mouth is again cauterized from above, as recommended by Bloodgood.

A case illustrating each variety of operation was reported.

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SURGERY OF THE NOSE, THROAT, AND MOUTH

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INTERNATIONAL ABSTRACT OF SURGERY

OCTOBER, 1915

COLLECTIVE REVIEW

THE SURGICAL TREATMENT OF TIC DOULOUREUX¹

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THE treatment of trifacial neuralgia by surgical measures dates from the early anatomical operations on the peripheral branches at their distribution on the face. While section suffices in some of the early cases of simple neuralgia, it can scarcely be considered a permanent means of relief in the patients suffering from the major forms or true tic douloureux, especially when associated with spasm of the facial muscles and vasomotor phenomena. The period of relief varies and in a series of 43 cases reported by Putnam and Waterman, cited by Woolsey (1), the average freedom from pain in 43 cases was 10 months. In other series cited by Woolsey the relief was not lasting.

The Thiersch avulsion with a blunt forceps so as not to crush the nerve, after anatomical exposure, followed by plugging the canal to prevent regeneration gives better results. Various methods of plugging have been suggested. Amalgam, gold and silver foil have all been used with varying success. C. H. Mayo (2) uses silver screws, and Kanavel (3) has advocated plugging the canals with bone grafts, all being employed to prevent regeneration. Van Gehuchten (4) insisted on avulsion as an essential step and La Place (5) again drew attention to this method. La Place took many minutes to slowly twist out the nerve-trunks, and succeeded in extracting long segments of the trunks after exposure at the foramina of exit on the face.

The supra-orbital branch of the first division is best reached by a curvilinear incision in the eyebrow. The skin, fascia, and fibers of the

orbicularis are divided. The nerve lies between the two layers of periosteum near the junction of the middle and inner thirds of the orbital ridge where a notch may be felt. After exposure of the nerve, which should be carefully separated from its accompanying vessel, it may be avulsed by the method of Thiersch.

The second or superior maxillary division is the branch most frequently affected, according to Spiller. It makes its appearance in the face at the infra-orbital foramen which is in a vertical line with the supra-orbital notch, just below the margin of the orbit. In this region it may be exposed on the face and avulsed or subjected to an injection of 1 to 2 per cent osmic acid or 80 per cent alcohol. The failure of this operation caused Kocher (6) to devise a method of resection at the foramen rotundum which is described in his book, which is a thorough treatise on the surgery of the trigeminus. The incision is in the same curvilinear line as for the peripheral operation but is carried farther back, at the same time avoiding injury to the fibers of the facial and being well above Steno's duct. All structures attached to the malar bone are pushed aside with a periosteotome, up to and including the floor of the orbit. The chisel is then used to cut into the sphenomaxillary fissure and to open the antrum. This opens the infra-orbital canal. The frontomalar articulation is divided with a chisel and finally the malar-zygomatic articulation. The malar bone is then dislocated outward and upward where the nerve can be followed and avulsed up to the foramen rotundum, care being taken

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not to injure the accompanying artery. The malar bone is then replaced. There is some risk of infection in this operation and as already noted the antrum is opened.

For division of the trunk of the inferior maxillary after its exit from the foramen ovale, either Kocher's or Kronlein's (7) operation may be used. In Kocher's operation a curvilinear incision with its convexity downward is made from just behind the frontomalar articulation to the root of the zygoma. This incision includes all structures and divides the temporal vessels and a branch of the facial nerve to the occipitofrontalis. Retracting the edges of the incision exposes the zygoma, which is divided but left attached on its under surface. After removing the underlying fat, the posterior border of the temporal muscle is drawn forward, exposing the periosteum along the pterygoid ridge. This periosteum is divided and elevated from the bone along with the soft parts so as to avoid the internal maxillary artery. This dissection is carried back until the base of the pterygoid process is seen, and just posterior and to the mesial side of this process we find the foramen ovale at a depth of about 3 cm. from the root of the zygoma. The trunk is then divided or avulsed according to the method of Thiersch.

The inferior dental branch of the third division may be reached by any one of three routes, although the intrabuccal method is accompanied by too much risk of infection to make it practical. In order to avoid a visible scar the incision is made just around the angle of the inferior maxilla, through all structures to the bone. With a periosteotome the tissues are elevated from the under surface of the ascending portion of the ramus until the foramen is reached, which is identified by the spine of Spix. The nerve can then be caught with a hook and avulsed. Another method is to approach the nerve by trephining the jaw just opposite the foramen, which is located just in the center of the irregular quadrilateral formed by the ascending portions of the ramus. A skin incision is made down to the masseter which is separated in the direction of its fibers. A small trephine is used to perforate the bone, and the nerve avulsed, avoiding the accompanying artery.

As most of the operations cited were followed by recurrences, the more radical treatment of trifacial neuralgia dates, according to Frazier (8) and Rose, from the suggestion of Dr. J. Ewing Mears of Philadelphia, who in 1884 proposed extraction of the gasserian ganglion for the relief of this class of sufferers. Truly, tic

douloureux is the most painful and intractable affliction medical men are called upon to treat, and opium in some form was formerly the only drug to be depended on for even temporary benefit. Adopting the suggestion of Mears, Rose (9) performed the first successful removal of the gasserian ganglion in 1890. The extracranial operation, which is known by the name of Rose, its originator, was not destined to survive, and soon valuable suggestions in the evolution of a perfected technique came from the clinics of Horsley (10), Hutchinson (11), Hartley (12), Krause (13), Doyen (14), Keen, (15), Lexer (16), Cushing (17), Abbe (18), and Frazier (19). The contributions from these men dealt both with the method of approach and the amount of tissue removed, or the site of division of the trunks. The earlier writers were all in favor of more or less complete removal of the ganglion. Realizing the dangers of complete gasserectomy, Abbe suggested section of the second and third divisions at their foramina of exit and the interposition of rubber tissue to prevent subsequent regeneration. Mixer (20) has plugged the foramen rotundum and the foramen ovale with amalgam, and Kanavel (21), after some laboratory experiments, has adopted the use of bone grafts in plugging these canals. Frazier's operation seems to give uniformly satisfactory results and among most surgeons is the present operation of choice.

There are several objections to the operation of Mears as performed by Rose. Technically the approach is difficult on account of the location of the ganglion, and the extreme depth beneath the base of the brain makes the operation of gasserectomy a formidable one. Hæmorrhage is frequently annoying and in some instances the operation has been performed in two stages (Lexer). In at least one instance (Krause) hæmorrhage was a fatal complication. Frazier, Cushing, and others have followed the suggestion of operating in the semivertical or erect posture. This diminishes venous bleeding by gravity, and the writer can testify to the value of this procedure in all cranial operations. As the bleeding is mostly venous and occurs from the diploic veins it may be controlled by the use of very hot water compresses, to which adrenalin may be added. Horsley's wax or muscle plugs in the bone canals may be used (22). Preliminary clamping of the external carotid has been suggested by Crile, but it is of doubtful value (23).

Aside from these technical difficulties, the mortality and recurrence are to be considered. In other words, Is the operation worth while as a therapeutic means of dealing with so deplorable

a condition? Frazier (24) has only recently collected the figures from various clinics as follows: In a series of 230 cases from the clinics of Horsley, Lexer, Dollinger, Cushing, and Frazier the mortality was 3.7 per cent. This figure is rather low and it must be remembered is from the most expert operators in this field. In Tiffany's collected series (25) of 108 cases the mortality was 22 per cent. While this seems high, the average would be somewhere in the neighborhood of the general surgical mortality from gasserectomy. As Frazier justly notes, when we take into consideration the age and debilitated condition of this class of sufferers, the mortality is no higher than after any other formidable surgical operation. The mortality should become less since we now understand more about the prevention of shock, hæmorrhage, and infection with its cerebral complications. Abbe quotes from Lexer 201 cases collected by Turk in which 85 per cent recovered from the operation. Of the 15 per cent who died, the cause of death is given as follows:

17 died on the table, 11 without regaining consciousness.

9 died of sepsis.

1 died of hæmorrhage.

2 had brain tumors.

2 died of post-operative pneumonia.

1 died of heart-failure.

1 died of uræmia.

1 died of cerebral softening.

Recurrence does not seem to be a serious consideration if the operation is properly performed.

In Lexer's 201 cases (26) there were 93 per cent permanent cures. The most frequent complication is the neuromyolytic keratitis which may follow gasserectomy. In two instances the writer has seen this complication with a permanent leucoma and consequent loss of vision. The risk of this very disagreeable incident may be minimized by avoiding injury to the facial nerve. After division of the second and third branches only, keratitis is not seen and as the first division is the seat of pain in less than 5 per cent of the cases this branch may be spared in most instances. Injury to the third, fourth, and sixth nerves near the inner aspect of the ganglion must be carefully guarded against. On account of this danger, Abbe, Hutchinson, and others have recommended only partial extirpations (trunks of the second and third divisions) of the ganglion, and all observers agree that a shield must be used to protect the eyes for some time after operations on the gasserian ganglion. The lids have been sutured to prevent

irritation of foreign bodies (Rose), but this is of doubtful value.

As already mentioned, the consensus of opinion among most surgeons is that Frazier's method of approach combined with Spiller's (27) suggestion of division of the sensory root is probably the most practical of the present-day operations. The Hartley-Krause method of exposure is unnecessarily large and may include some fibers of the facial, causing paralysis of the orbicularis palpebrarum, thereby contributing to the keratitis. The methods of Cushing and Lexer are similar to the Hartley-Krause operation, but the flap is much lower down. Cushing removes the zygoma, while Lexer replaces it at the completion of the operation. Kocher includes practically the same tissues but reverses the attachment of the flap. In this way the larger part of the horseshoe is down to the zygoma and gives more room for viewing the basal foramina from within the skull. Doyen divides the temporal attachment to the coronoid process of the maxilla beneath the zygoma and re-attaches it at the end of the operation. Kocher avulses the sensory root and claims to have had no recurrences.

For the description of Frazier's operation I cannot do better than quote directly from Frazier's contribution to Keen's Surgery (Vol. V).

The Spiller-Frazier method—division of the sensory root by the auriculotemporal route. "The essential feature of this operation is the division or avulsion of the sensory root exclusively without interfering with the ganglion itself. The approach to the ganglion is made through an opening somewhat posterior to that employed by other surgeons. The center of this opening is about on a line with the point at which the sensory root passes into the ganglion. Inasmuch as this method does not necessitate exposure of the anterior portion of the ganglion, including its first and second divisions, this method of approach is preferred. Under nitrous oxide ether anæsthesia, preceded by the administration of a hypodermic injection of morphine (grain 1:6) and atropine sulphate (grain 1:100), with the patient in a vertical posture, a horseshoe-shaped incision is made, beginning about the middle of the zygoma and terminating behind and a little below the helix of the ear. The musculocutaneous flap, purposely made a little larger than the opening in the skull, is reflected, the skull opened, and the opening, with a diameter not exceeding 3 cm., enlarged as far as the infratemporal crest. The dura is separated from the base of the skull with a blunt instrument, such as the handle of a scalpel, as far as the foramen spinosum,

where the middle meningeal artery is ligated and divided distal to the ligature. The dura propria is incised directly over the mandibular division and dissected from the superior surface of the ganglion backward and inward until the sensory root is exposed. If the motor root can be recognized, it should be isolated. The sensory root is then picked up with a blunt hook, grasped with forceps, and either divided or avulsed. Hæmorrhage is controlled throughout the course of the operation by strips of gauze not more than 1 cm. in width, introduced at either side of the avenue of approach in such a way as not to interfere with the continuation of the operation. As soon as the sensory root has been divided the anæsthetic is discontinued, inasmuch as all the structures in the field of operation have been rendered anæsthetic and the patient will experience no pain in the subsequent steps of the operation. When the reflexes have returned, the conjunctival reflexes should be tested in order to assure the operator that no fibers of the sensory root remain undivided. The musculo-cutaneous flap is closed with tier sutures and a small narrow strip of rubber tissue introduced in the posterior angle of the wound. It is almost always necessary to provide for the escape of blood, inasmuch as only exceptionally will the field be entirely dry when the operation is concluded. (This is accomplished by a rubber tissue drain.) The rubber tissue is removed within twenty-four or forty-eight hours."

Division of the sensory root was first practiced by Frazier in 1901, and since that time has been used almost exclusively. There has been no evidence of regeneration of the sensory root. The advantages claimed for this operation over extirpation of the ganglion are: First that it is attended with less hæmorrhage because the ganglion is not raised from its bed. In extirpation of the ganglion the most troublesome bleeding is experienced at this stage of the operation. Second, it does not expose to injury the adjacent structures, viz., the cavernous sinus and the three cranial nerves. Third, it is possible, though very rarely, to preserve the motor root and thereby avoid disturbance of the functions of the muscles of mastication. Finally, there is less likelihood of ulceration of the cornea.

The advantages of Frazier's operation are:

1. Approach is more posterior and is therefore less likely to involve the upper fibers of the facial.
2. A comparatively small opening diminishes the liability to hernia.
3. Special technique of dealing with the middle meningeal artery should be noted.

4. Division or avulsion of the sensory root only with less frequent occurrence of the distressing neuroparalytic keratitis.

5. Cerebral complications have been far less frequent than formerly.

6. If the sensory root is not easily recognizable we can always have recourse to one of the other suggestions, such as complete removal of the ganglion (Hartley-Krause, Lexer, Cushing, and Horsley), or section of the second and third divisions (Hutchinson, Kanavel, Abbe, Harris, Mixter, and others).

The writer has attempted in the preceding remarks to review briefly the general conclusions he has been able to gather of the surgical operations on the gasserian ganglion and the trigeminal distribution for the relief of tic douloureux that have stood the test of time. The treatment of this painful affection has undergone some radical changes in the last few years, due to the epoch-making work of Schlösser, an ophthalmologist of Munich. Prior to the work of Schlösser, who first used alcohol injections into the facial to control spasm, many substances had been injected into the large nerve-trunks at their exit from the basal foramina, after exposure, with the idea of causing an ascending degeneration of the axis cylinders, and thereby relieving the pain without the necessity of a serious intracranial operation with its attendant risks. Such drugs as morphine, strychnine, hyoscyamine, aconite, curare, zinc chloride, osmic acid, and many others were all tried with varying success. Schlösser suggested the use of 80 per cent alcohol and at the same time gave an impetus to the study of the location of the basal foramina and their approach.

Long before the injection of the trigeminal branches for therapeutic purposes had been tried by Schlösser (28), practical surgeons had planned methods of reaching these branches in order to obtain control of the field for surgical procedures. Probably the first recorded operation under regional anæsthesia of the trigeminus by the intraneural injection of the second division with cocaine was done in 1898 by Dr. R. Matas at the Charity Hospital in New Orleans (29). At this time he used the inframalar route to the foramen rotundum via the sphenopalatine fossa, and in this particular case he utilized for the first time the orbital route through the sphenomaxillary fissure for injecting the second division at its exit from the foramen rotundum. In this way he obtained anæsthesia of Meckel's ganglion and its branches, which, when repeated on the opposite side, permitted the painless removal of

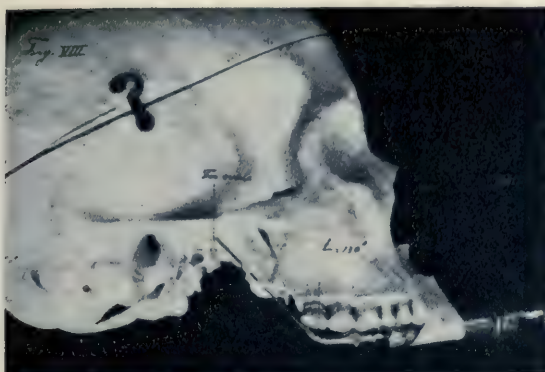


Fig. 1. Ostwalt's route to the trunk of the mandibular division (Braun).

both superior maxillæ and the palate. Professor Braun (30) and other German writers credit Dr. Matas with the first application of the lateral or inframalar route, but through some error they attribute the orbital route to Payr of Breslau, who operated by this route at a much later period. As early as 1889 Dr. Matas succeeded in obtaining a sufficient anæsthesia for operations on the superior maxilla, by injection of the second division of the fifth nerve at the foramen rotundum through the sphenomaxillary foramen. He performed several operations on the jaws by injecting the trunks by the inframalar route, which has since been associated with his name by Braun and others, and is practically the same as was subsequently adopted by Schlösser.

The first impetus to the treatment of tic douloureux by the intraneural injection of chemicals, came with the suggestion of Neuber who used osmic acid (31). This suggestion was later adopted by Bennett (32), and Murphy (33) made his first report in 1903. While osmic acid gave relief in many cases, the benefit was not permanent and required exposure of the nerves at their foramina of exit with injection directly into the trunks of several drops of a 1 or 2 per cent solution.

The injection of alcohol into the trunks of the trigemini at their exit from the basal foramina according to the method of Schlösser was somewhat uncertain and a new impetus was given to the work after the early publications of Ostwalt (34), who reported only 4 failures in 45 cases by the intrabuccal route. A perfected technique came from Sicard (35) and Levy and Baudoin (36), who presented measurements as guides to the trunks and mentioned the dangers. Later suggestions came from various observers, and Offerhaus (37) perfected a method by which the



Fig. 2. Offerhaus' method of ascertaining the depth of the foramen ovale (Braun).

foramen ovale could be located by measurements. The Offerhaus technique may be said to be an improvement on the method of Ostwalt, and Offerhaus gave a series of measurements for locating the foramen ovale. The intrabuccal route was soon abandoned on account of the obvious risk of infection.

After a study of 50 skulls, Offerhaus found that the distance measured from the outside, behind the last molar teeth nearly corresponds to the distance between the two oval foramina, so that if the length of the space between the alveolar processes behind the last molar teeth of the upper jaw is deducted from the length of a line (measured by calipers) between the articular tubercles on either zygoma, and that divided by two, the result will give the approximate depth of the foramen ovale from the articular tubercle of the corresponding side. Offerhaus has found the average depth of the foramen ovale to be between 3.7 and 4.3 cm. This method is reliable in a measure, and may be used also to determine the approximate location of the foramen rotundum, which is a short distance in front of, and nearly on the same perpendicular plane with, the foramen ovale when the patient is recumbent.

The routes of Sicard and Levy and Baudoin with the suggestions of Harris, Patrick, Hecht, and Kiliani (54), are those accepted today as the best, consequently I will attempt a brief description of the application of these. The technique

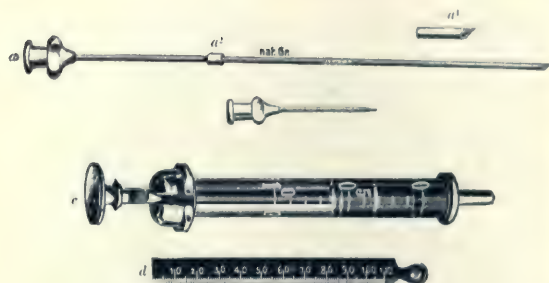


Fig. 3. Centimeter scale, syringe, small needle, and large needle with runner and bevel point for injection of gasserian ganglion (Härtel).

varies slightly in the hands of different observers, but the essential points remain the same. There is no special advantage in the routes recently advocated by Bonola (38).

Schlösser suggested the use of 80 per cent alcohol, which is the solution in general use at the present time. Hecht has found that 70 to 80 or 90 per cent alcohol is similar in effect, and at the present time Harris is using 90 per cent alcohol (39). The injection of the alcohol first causes intense pain over the distribution of the trunk injected, followed in from 5 to 30 seconds by a deepening anæsthesia, and, in the case of the third division there is some rigidity and paralysis of the muscles of mastication, due to the fact that there are motor fibers in this trunk. This phenomenon soon disappears and patients quickly become accustomed to the use of the opposite side of the mouth. Patrick (40) used a solution containing cocaine grain 1, chloroform min. x, alcohol $\frac{1}{2}$ ounce. Purves Stewart (41) recommended a solution containing β -eucaine, 2 grs., to absolute alcohol 6 drams, and others have added menthol, but these additions are not necessary if the suggestion of Matas is adopted (42), which is to precede the alcohol injection by the preliminary injection of a 1 per cent novocaine adrenalin solution. This has the double advantage of preventing the pain caused by the alcohol contact and also allows us to test the anæsthesia, with the needle *in situ*, to determine the accuracy of the puncture. The writer has found this preliminary novocainization very valuable in puncture of the gasserian ganglion prior to the introduction of 80 per cent alcohol.

The patient's skin is prepared by a generous coat of iodine over an area about the size of a 50 cent piece, and a wheal is made in this area by the injection of a few drops of a 1 per cent novocaine adrenalin solution. For the alcohol injection the outfit of Härtel is best for all purposes.

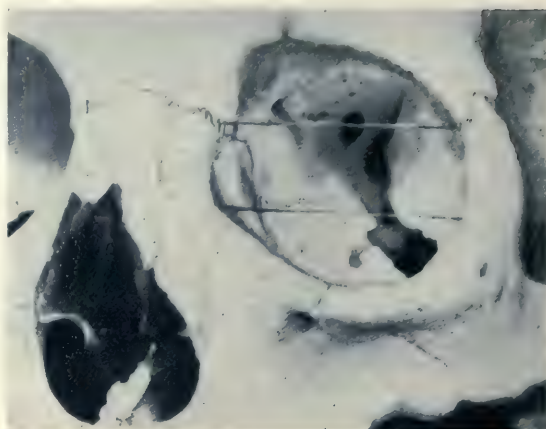


Fig. 4. Front view of left orbit showing the location of the contained foramina by two horizontal planes (Härtel).

The needle — 8 mm. in diameter and 10 cm. in length graduated in centimeters with a movable runner or perforated cork to gauge the depth of penetration — will serve to mark the average distance of any of the trunks or of the gasserian ganglion itself. In all cases the alcohol must be slowly introduced after withdrawing the stylet from the bevel pointed needle. Bleeding should warn against the introduction of the alcohol, as a hard clot forms which gives a sense of resistance. This resistance should be present if the needle point is engaged in the nerve-trunk, but its absence should not preclude the introduction of the alcohol if the anæsthesia has already been tested by the use of the novocaine adrenalin solution.

The ophthalmic division is rarely the site of pain, being involved alone in less than 5 per cent of the cases. In Hecht's series (43) the first division was involved 4 times in 32 cases and as the supra-orbital division is the most approachable of all the branches, avulsion, osmic acid, or alcohol injection after exposure, or avulsion and plugging the canal with bone grafts according to Kanavel's suggestion may be followed. According to Blair (44), Patrick has abandoned the injection of the first division. Blair himself has had no mishaps, although he has known of two cases of blindness and one of dementia following this procedure.

In the method given by Blair, the needle is inserted under the external angular process of the frontal bone and follows the outer wall of the orbit closely, backward and inward and downward to the outer extremity of the sphenoidal fissure, where the nerve enters the orbit at an



Fig. 5. The Matas route to the second division in the pterygopalatine fossa (Härtel).

average depth of 30 to 35 millimeters. Blair mentions that in a number of skulls the optic nerve was never encountered at a depth of less than 43 mm. On account of the loose tissue of the orbit and the proximity of other nerve-fibers, it would be wise to follow the suggestion of Matas, injecting a few drops of 0.5 per cent novocaine solution to test the anæsthesia prior to the introduction of alcohol. Dimness of vision, diplopia, blindness, hæmorrhage with exophthalmos are all mentioned as possible complications which have caused the abandonment of the injection of this division.

Härtel has shown the location of the optic foramen and the structures within the orbit very well, as represented in the accompanying illustrations. The upper line running from the frontomalar to the frontolachrymal articulation crosses the optic foramen and is therefore to be avoided.

The second or superior maxillary division is, according to most observers, the division most frequently involved, and Harris (45) in his recent paper before the American Medical Association stated that when the ophthalmic division is in-

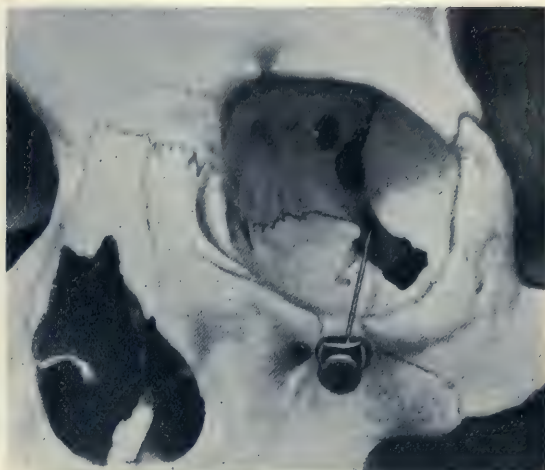


Fig. 6. The Matas route to the foramen rotundum through the sphenomaxillary fissure (Härtel).

involved, it is only a question of time when the second or even the third division will become affected.

In the classical papers of Patrick and Hecht the routes of Levy and Baudoin are selected, and Harris in his last review of the subject still adheres to this technique with slight modifications. Patrick's directions for reaching the superior maxillary division are as follows: "The line of the posterior border of the ascending (orbital) process of the malar bone is prolonged to the border of the zygoma and the needle inserted 0.5 cm. posterior to this point. It is directed vertically to the anteroposterior line, but inclined slightly upward in a direction which would attain at the depth of the foramen rotundum, the level of the inferior extremity of the nasal bones. At a depth of 5 cm. the nerve is reached at its emergence from the foramen rotundum in the pterygomaxillary fossa. In Harris' last contribution (45), he suggests the use of one of two routes, depending on the pterygoid plate as his guide. The foramen rotundum lies about 1 cm. internal to its anterior border. The needle is entered 6.5 cm. in front of the center of the external auditory meatus, directing it upward at an angle of 40°, and backward at an angle of 30°, striking the anterior border of the external pterygoid plate at a depth of 1¼ inches, or about 5 cm. Then the needle is directed forward through the pterygomaxillary fissure into the pterygomaxillary fossa to a depth of 1⅓ inches, when the nerve is encountered at its exit from the foramen rotundum. Should this route fail, Harris inserts the needle 4 cm. in front of the center of the auditory meatus, pushing the needle forward and

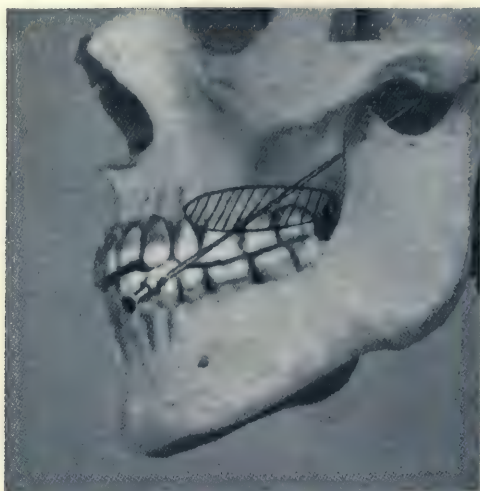


Fig. 7. Showing area of novocaine anæsthesia on the cheek in Härtel's method of injecting the gasserian ganglion (Härtel).



Fig. 8. Needle engaged in the foramen ovale (Härtel).

upward to locate the pterygoid plate, which is his guide.

The untoward results to be guarded against here are: (1) Pushing the needle too far may place the alcohol too near or in the optic foramen. (2) The internal maxillary artery may be injured, with a consequent hæmatoma. (3) If the injection is too far forward, the branches going to Meckel's ganglion will not be controlled and some pain in the palate will persist. (4) The pterygo-maxillary fissure may be small and allow only a limited angle in the direction of the needle. (5) Diffusion of fluid into the orbit must be guarded against and the swelling and œdema may even extend to the cellular tissue of the orbit after a successful injection, emphasizing the fact that 20 to 30 minims of alcohol is ample in this region. Paralysis of the third nerve has been noted, but soon disappears.

The third or mandibular division of the trifacial is the most accessible. Sicard, Levy and Baudoin, Patrick and Harris all make use of the same route, which in turn is the same used by Matas to obtain analgesia for surgical intervention about the tongue and lower jaw. The trunk is encountered after its exit from the foramen ovale at a depth of $1\frac{5}{8}$ to $2\frac{1}{2}$ inches, depending on the shape of the head and the thickness of soft parts. The needle is inserted in the sigmoid notch 2.5 cm. in front of the descending root of the zygoma which is nearly on a plane with the anterior border of the bony external auditory meatus. The needle is pushed straight in, hugging the base of

the skull, the nerve being encountered at an average depth of 4 cm.

The attendant risks are: (1) hæmatoma and possible diffusion of alcohol into the gasserian ganglion; (2) the pharynx may be penetrated if the needle is carried in too deeply, and a painful otitis or deafness may follow injury to the eustachian tube. The internal maxillary artery and the middle meningeal artery are avoided by passing in front of the maxillary articulation. If difficulty is encountered in passing through the sigmoid notch, it may be overcome by having the patient's mouth wide open.

Injection of alcohol into the gasserian ganglion, the final achievement in the treatment of tic douloureux, has come from Bier's clinic. It is the work of Fritz Härtel, who has been a most ardent and systematic exponent of the direct alcoholization of the ganglion itself, and his work is a masterpiece of patience and thoroughness (47). While the idea of direct alcoholization of the gasserian ganglion is not original with Härtel he has given us a route which has made the approach through the foramen ovale more practical and useful. Taptas (48) and Harris (49) had already approached the ganglion by the Schlösser route, and the suggestion seems to have emanated from Sicard (50) during his earlier work on injection of the mandibular division of the trifacial. From this direction the entrance into the foramen ovale was a matter of luck, as a study of the skull will show. Curved needles or the bayonet-shaped needle of Hecht were helpful.



Fig. 9.



Fig. 10.

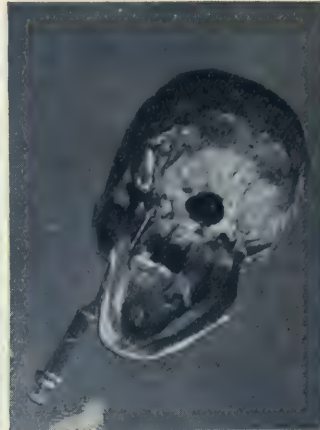


Fig. 11.

Fig. 9. Needle in foramen ovale, entering cheek opposite a point behind the last molar teeth of the lower jaw.

Fig. 10. Same as Fig. 9 viewed from mesial section.
Fig. 11. Same as Fig. 9 viewed from under surface of skull.

The technique suggested by Härtel is to anæsthetize a spot on the cheek corresponding with the area shown in the illustration. The needle is pushed backward and inward, care being taken to avoid entrance into the mouth by keeping the finger (index of hand not in use) on the inside of the cheek. The point of the needle is made to come in contact with the os planum on the under surface of the sphenoid, and is gradually made to move backward when it engages in the opening of the foramen ovale. It is essential that one recognize this smooth infratemporal surface in front of the foramen. This is safe territory, and the rough bone back of the foramen is fraught with danger. According to Härtel the needle points to the pupil of the eye of the same side, and on lateral view the needle points to the articular eminence on the zygoma when the skull is viewed from the front. In other words the location of the foramen is at a point on the base of the skull where a perpendicular plane through the center of the pupil and a horizontal plane through the articular eminence bisect.

Härtel has made careful measurements of the size of the foramen ovale and found it to vary in length from 5 to 11 mm. (average 6.9 mm.) and with an average width of 3.7 mm. The average depth of the canal is about 1 cm.

The runner is placed at the 6 mm. mark on the needle and this distance must not be exceeded unless the operator is certain of his surroundings, which certainty can only be acquired after long practice on the cadaver. As the needle ceases to impinge against the bone and enters the foramen

the loss of resistance is felt and the patient complains of pain in the distribution of the third division. The needle is pushed in 1.5 cm. farther when pain is complained of in the distribution of the second division. The introduction of 1 ccm. of 1 per cent novocaine solution at this point (Matas) should produce anæsthesia of the entire trifacial distribution. After testing the anæsthesia, with the needle *in situ*, and feeling sure of the location, we may now inject 1 to 2 ccm. of 80 per cent alcohol. If the preliminary injection of novocaine has not been made, the patient complains of intense pain at this stage and may even start or jump so as to move the point of the needle and cause some of the untoward results of too deep an injection. There may be some burning complained of, even after the preliminary use of novocaine, but usually the anæsthesia is complete and lasting. However, a return of pain is a call for re-injection, which, if properly done, gives lasting benefit. In patients with bilateral involvement, there should be a long interval between injections in order to watch the effect on the cornea. In 265 cases Harris has seen bilateral involvement 6 times (51).

In a series of observations on the cadaver in the Miles Laboratory of Operative Surgery at the College of Medicine of Tulane University, under the direction of Prof. R. Matas, the writer verified the observation of Härtel, that the axis of the foramen varied considerably and could be entered from any point on the arc of a circle drawn from the second molar tooth of the upper jaw to a point behind the last molar tooth of the

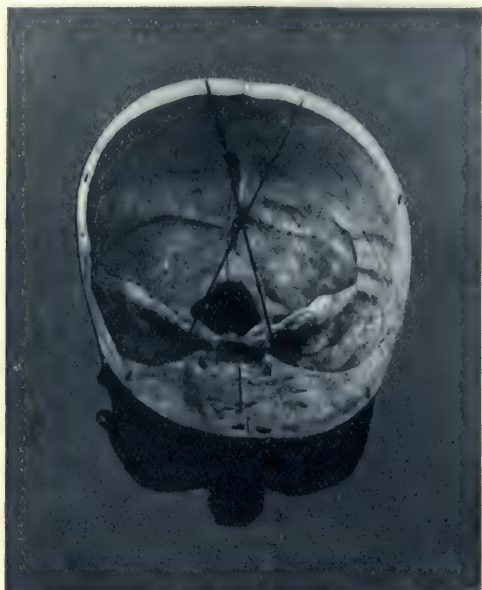


Fig. 12. Showing projected axes of foramina from point on cheek behind last molar tooth of lower jaw. (Figs. 9, 10, 11, and 12 are from the original collection of Prof. R. Matas.)

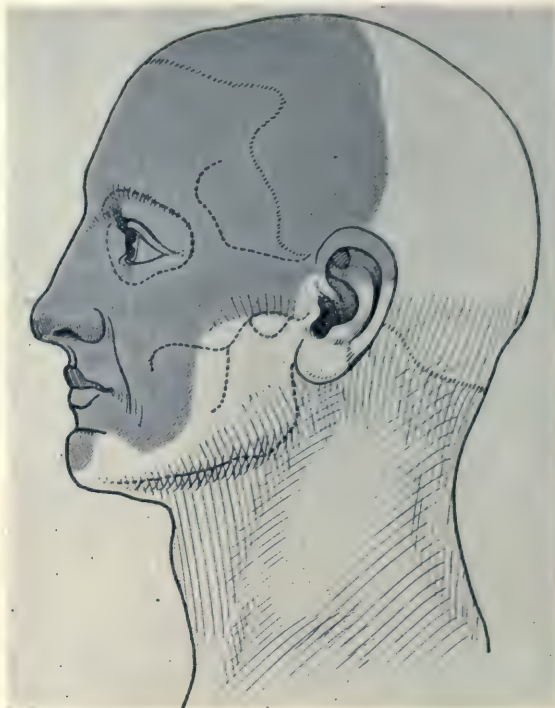


Fig. 13. Showing area of anæsthesia after alcoholization of gasserian ganglion (Härtel).

lower jaw. By projecting the axis of the canal with long pins, the latter point was found to more often give a better direction to the needle, beside giving several additional factors of safety. It was found in the Härtel technique, the needle more easily passed beneath the foramen on account of its obliquity, and brought the point into the dangerous territory behind the foramen ovale.

In our estimation, direct alcoholization is equivalent to a gasserectomy as far as immediate physiological effects are concerned. The effect of alcohol on the ganglion is gradual, and because of this the immediate bad effects of gasserectomy are not seen. Härtel, after his first ten injections saw two develop keratitis. Harris has also seen this accident, and we have had one patient who had a leucoma which has cleared. Harris recommends suture of the lids, leaving the angles open for irrigation of the conjunctival sac. After a successful injection the cornea is anæsthetized and should be carefully watched for any beginning ulcerations which in turn should receive prompt attention. In two of the writer's cases there was an intense painless herpes of the lower lip and in one on the upper lip. This complication has caused Härtel to caution us when inspecting diabetics. One case showed the herpes on the second day, one on the fifth day, and one on the thirteenth day. One patient had paralysis

of the motor oculi, which is subsiding after four weeks. This phenomenon can only be explained by the permeation of the alcohol. Blair has seen paralysis of the seventh and eighth nerves. He injected 4 ccm. of alcohol, which is too much; 1 to 2 ccm. being ample for full therapeutic results. The anatomical dangers were mentioned in a former paper of the writer (52). We must be sure to make an extradural injection. In one instance the writer got cerebrospinal fluid. The needle was drawn out some distance, and the injection made with a perfect result. The veins in the pterygoid fossa or the emissary veins coming through the sphenoid may be injured. This may cause hæmatoma. Behind the foramen ovale, are the foramen lacerum medium, the carotid canal, and the middle meningeal artery, before its entrance into the foramen spinosum.

PERMANENCY OF RESULTS

In the peripheral injections, the period of relief has been very variable, with an average of about eight months. In Härtel's 27 cases (53) he is satisfied with his results, re-injections being rarely necessary. The writer's first case, injected in June, 1913, reported lasting relief (52).

We are justified in concluding that the injections into the large nerve-trunks of 80 per cent alcohol offer a safe and usually certain means of relieving painful affections involving the fifth nerve, and that the direct alcoholization of the gasserian ganglion offers a means of curing tic douloureux which is devoid of the usual dangers accompanying intracranial operations on the ganglion. Finally, the only safe means of acquiring skill and precision in locating the basal foramina and the routes to the gasserian ganglion, is long practice on the cadaver and study in the anatomical rooms.

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ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Morestin, H.: Protecting the Large Blood-Vessels in Extirpating Tumors (La protection des gros troncs artériels et veineux mis à nu dans l'extirpation des tumeurs). *Bull. et mêm. Soc. de chir. de Par.*, 1915, xli, 960.

When large arterial or venous trunks are exposed in operating for tumors they are subject to infection and secondary hæmorrhage; so much so that in pre-aseptic days tumors were not operated upon if they were very near large vessels. To avoid this danger Morestin advises covering the vessels with a flap from the neighboring muscle. Where the glands of Scarpa's triangle have to be removed on account of cancer metastases he makes use of the sartorius muscle. It is very easy to draw it inward and fix it with a few sutures to the crural arch and the adductors. A thick band of muscle is thus interposed in front of the vessels, protecting them from infection.

In the axilla the vessels are generally not exposed to any great danger; in the majority of cases the skin wound can be completely closed at once. But in some cases where it was necessary to remove large sections of the skin he has utilized flaps from the latissimus dorsi, the subscapular, the serratus magnus, and pectoralis major. This plastic use of the muscles is particularly valuable in the region of the neck and in tumors of the tongue and pharynx.

In operating for cancer of the tongue after removing the glands and before beginning the operation in the mouth the anterior border of the sternomastoid is sutured to the posterior belly of the digastric to the stylohyoid and to the subhyoid muscles, so that the vessels are completely cut off from the infected region by a thick layer of muscle. Since adopting this method Morestin has never had a secondary hæmorrhage from ulceration of the carotid.

A. Goss.

Tennant, C. E.: The Use of Hyperæmia in the Post-Operative Treatment of Lesions of the Extremities and Thorax. *J. Am. M. Ass.*, 1915, lxiv, 1548.

Under this method of treatment the author has had about 90 per cent of his grafts hold in varicose ulcer of the leg and the period of convalescence has not exceeded eighteen days.

He has also been surprised and pleased with the results obtained by the use of vacuum hyperæmia in the treatment of infected compound comminuted fractures of the extremities. Where the bones are in good apposition and anywhere about or below the elbow or knee, whether in a wooden splint or a snugly fitting plaster-of-Paris dressing, these extremities can be easily placed in the vacuum chamber and daily suction hyperæmia instituted. Each time the treatment is applied, the lacerated tissues and the ends of the bone are bathed in blood and serum, these acting as bactericidal agents. Daily applications soon control the infection present and eventually leave a clot of fibrinated blood between the ends of the bone, thereby aiding osteoblastic proliferations. This same clot also aids very materially in hastening repair in the soft tissues. This method, if used for a period of thirty minutes daily, commencing immediately after the injury or operation, would probably reduce the period of disability and convalescence about 50 per cent.

For more than ten years the author has been using hyperæmia as a routine treatment in all his thoracotomies for empyema. There is rapid and effective emptying of the chest cavity of pus and blood, which is accomplished through a medium-sized opening, early and successful expansion of the lung as demonstrated by the röntgen ray, and early closing of the drainage site and the absence of post-operative sinuses with their annoying complications. These all make for an extremely short convalescence.

So long as the patient is comfortable and suffers no pain while suction is being used, no harm will come from the negative pressure in the pneumothorax cavity.

EDWARD L. CORNELL.

ASEPTIC AND ANTISEPTIC SURGERY

Keilty, R. A., and Packer, J. E.: Experimental Studies of Various Antiseptic Substances for Use in Treatment of Wounds. *J. Am. M. Ass.*, 1915, lxiv, 2123.

The organisms used in the authors' work were the staphylococcus aureus, streptococcus pyogenes, and bacillus coli. Their technique is fully described and the following conclusions reached:

1. The method as outlined by Cheyne offers an excellent means for the study, experimentally, of the diffusibility and antiseptic power of drugs.

2. The results obtained as to the value of well-known remedies are confirmatory in some cases and startling in others.

3. The phenol group and thymol give the best results as far as the authors' experience went.

4. They are able to recommend an ointment composed of a base, castor oil, 70 parts, white wax, 20 parts, spermaceti, 10 parts, with tricresol and thymol, 10 per cent each. Lanolin and wax may be used, but the vegetable base has some advantages.

5. These results are experimental and must be borne out by clinical application. This the authors hope to do and report in the near future.

6. The only drawback is the possibility of toxic effects, and this may be overcome by cautious usage in the amount applied and the interval between dressings.

7. This paste has a wide range in civil life as well as in war and should prove more effective than those of common usage because of the increased percentages of the drug.

8. At the same time, the principle of the large dose is to establish at once, or to maintain, an asepsis in a wound until ideal conditions for surgical treatment are available.

EDWARD L. CORNELL.

ANÆSTHETICS

Brenizer, A. G.: Scopolamine-Morphine-Cocaine Anæsthesia in Surgery. *N. Y. M. J.*, 1915, ci, 1215.

Crile's investigations on shock revealing the similarity of the damage done the central nervous system by surgical operation and by mere exhaustion, led to his theory of anæsthesia with anoci-association, a combination to provide the advantages of (1) psychic depression by preliminary hypodermatics, (2) general anæsthesia by nitrous oxide, and (3) local analgesia by cocaine injections.

Adopting as a basis Crile's theories, Brenizer modifies the method to the extent of using no general anæsthetic, depending alone upon scopolamine as a psychic depressant, morphine as a general analgesic, and cocaine as a local analgesic. Adjuvant to the cocaine injections he uses large quantities of salt solution, as in the Schleich method of local anæsthesia. In his opinion, scopolamine as a hypnotic differs from opium and members of the methane series, in that the sleep is more nearly natural (even if less reliable), which makes it valuable for its psychic effect, 1/120 of a gr. being generally sufficient, though it is not very dangerous—a man has recovered from 1/2 gr. without harm and 7 1/2 gr. failed to kill a small cat. Small doses with proper intervals are preferable to one large dose. The large doses do not cause deeper sleep, but give rise to delirium and excitement similar to that produced by atropine. Scopolamine also diminishes the secretion of saliva and mucus. (Morphine and ether, he says, stimulate these

secretions.) He thinks also that it may cause a decrease in thyroid secretion; hence its particular advantage in goiter in which the above advantages (cerebral depression, diminution of saliva and mucus, and slow quiet respiration) are important.

Morphine, used as a general analgesic, has a more extended action on the central nervous system than scopolamine, its effect upon motor function being due not to direct, but indirect action, through lessened sensibility of the sensorium. Cocaine used as a local analgesic has a stimulating action upon the central nervous system, but this effect is counteracted by scopolamine and morphine, combined with which it may be used in large doses. Susceptibility to it is variable and demands care.

Schleich's method of local anæsthesia, using a large volume of salt solution, but a minute dose of cocaine (3/10 gr. in 200 ccm. of solution) proved the anæsthesia to be produced by pressure of the fluid, and not entirely by the drug action. Salt solution alone, even 0.8 per cent, produced local anæsthesia and Heinze showed that the morphine in Schleich's original fluid was superfluous, having no peripheral action on nerves. The solution has additional value in accentuating the anæsthesia as injected into the muscles. They are relaxed by means of the pressure breaking the contact of nerve-ending and muscle-fiber. He quotes authorities to show that major operations were done before 1899 with local anæsthesia only. Later developments reduced the dose of the drugs without making the addition of ether necessary. One death was recorded, from failure of respiration. Krönig pointed out that troubles in respiration reported by some are due to the morphine and not the scopolamine. He uses 1/100 gr. scopolamine, one and one-half hours before operation, and a half hour later 1/100 gr. scopolamine, and 1/4 gr. morphine, one-half hour later he repeats the dose of scopolamine and morphine. This makes a total of 3/100 gr. scopolamine and 1/4 gr. morphine. Occasionally this third injection can be omitted. Blood-pressure is somewhat lowered. The sleep that ensues is unbroken by moving to the operating room if this be quietly done. The patient has no recollection of the operation. In about 15 per cent of cases the action is incomplete. In about 5 per cent the patient is restless and fretful with memory only disturbed. Only this 5 per cent demand ether. The structures are infiltrated with 20 ccm. of cocaine, 1/1000, in normal salt solution, the amount rarely exceeding 150 ccm. Emphasis is put upon the observation that in cases demanding ether, say 10 per cent, the amount needed is very small, not over a few drams, with very marked lack of the undesirable effects following large doses of ether alone.

Abdominal distention is perhaps greater after scopolamine and morphine, than after ether alone, but cocaine by its stimulating action counteracts intestinal paresis, and pituitrin will aid peristalsis and

muscular tone. He enumerates the kind of operations done by the method, including head, neck, thyroidectomies, chest, abdomen, hernias, inguinal, femoral, and ventral, vagina, perineum, extremities. For mere examinations he recommends half the dose.

Summarizing, the following points are to be noted: (1) The injection is made one and one-half hours before operating. (2) The patient is very gently moved. (3) The patient is undisturbed by the cocaine injections. (4) The breathing is quiet, not rough and snoring. (5) There is no trouble from secretion of mucus and saliva. Vomiting is rare. (6) Any depressant action on the thyroid is an advantage in goiter operations. (7) The after-effects are nil. (8) After-pain in the wound is diminished. (9) Shock is absent. (10) Insufficient local analgesia or muscular relaxation can be overcome by injections of large quantities of salt solution with a minute dose of cocaine.

F. W. PINNEO.

Boldt, H. J.: Spinal Anæsthesia (Spinale Anästhesie). *Zentralbl. f. Gynäk.*, 1915, xxxix, 337.

Boldt believes that since the introduction of novocaine, spinal anæsthesia may advantageously be used to replace inhalation anæsthesia in many cases, particularly in patients with respiratory, kidney, or heart disease, degeneration of the heart muscle, obesity, and diabetes. Since using novocaine he has never had any serious by-effects. No deaths have been reported from the use of novocaine. The headache, temporary paralysis, etc., reported by some authors, he thinks is due to defective technique. Since he has adopted the plan of removing $\frac{1}{2}$ to 1 ccm. more of fluid from the spinal canal than he injects and very carefully removing the iodine from the site of the injection with alcohol he has had no trouble from headaches. He gives a 10 per cent solution of novocaine-suprarenin. When a weaker solution was used he has sometimes had to supplement the anæsthesia with ether. Enough morphine and scopolamine are given before the operation to keep the patient in twilight sleep during the operation. A. Goss.

Adam, L.: Local Anæsthesia of the Abdominal Cavity (Über die Anästhesierung der Bauchhöhle). *Deutsche Ztschr. f. Chir.*, 1915, cxxxiii, 1.

Adam reviews the previous work in local anæsthesia for abdominal operations and describes that done at Prof. Dollinger's clinic in Budapest. Experiments have shown that the intestine, stomach, and other abdominal organs are not sensitive, but that to operate without pain it is necessary to anæsthetize the skin, the layers of the abdominal wall, the parietal peritoneum, and the lesser omentum.

To anæsthetize the whole abdomen and pelvis, the intercostal nerves and the communicating branches from the fifth dorsal to the third lumbar vertebrae must be injected. The technique is described with an illustration and a diagram of the position of the nerves. One per cent novocaine was used as the anæsthetic. It was used in 18 cases of cholecystectomy, 95 of appendicitis, 30 of umbilical hernia, 7 of epigastric and abdominal hernia, 2 of cyst of the pancreas, 1 of extirpation of the spleen, 2 of cholecystenterostomy, 2 of gunshot wounds of the abdomen, and 18 exploratory laparotomies. In only a few cases was it necessary to resort to inhalation anæsthesia. There were unpleasant by-effects in only 3 cases. One patient had hysterical spasms after the first injection so that the operation had to be postponed; 2 became very pale and the pulse ran up to 120, but they were normal by the end of the operation.

This method has several advantages over inhalation anæsthesia; the patients do not feel the depression that they do after general anæsthesia; vomiting is rare and is never so severe or prolonged as in general anæsthesia; there is never dilatation of the stomach or aspiration pneumonia. Some operators object to the method because of the great number of injections and the large amount of the anæsthetic necessary, but these objections can doubtless be overcome to a great extent by a closer study of the innervation of the regions affected and by improved technique. The work that has already been done proves that local anæsthesia in abdominal operations is quite feasible. A. Goss.

SURGERY OF THE HEAD AND NECK

HEAD

Frazier, C. H.: Operative Treatment of Head Injuries. *Internat. J. Surg.*, 1915, xxviii, 183.

The author regards contusion as a lesion without any demonstrable injury to the cerebral structures. The symptoms, therefore, must of necessity be transitory if not immediately fatal; hence surgical intervention is not indicated in this condition. If following an injury to the brain the symptoms persist beyond immediate shock, the condition is one of contusion, presenting a definite pathological lesion.

Frazier divides the latter injury into four groups as follows:

1. Slight injury in which recovery is certain without operation.

2. Damage to the brain so great that death is unavoidable. An important diagnostic point in this group is the high temperature, ranging from 102° to 105°. A rapidly rising temperature is always indicative of a serious central lesion.

3. Conditions that while serious do not threaten life.

4. The condition in which the patient survives the immediate period of shock, followed by symp-

toms of intracranial tension, becoming progressively more serious.

The author believes that subtemporal decompression should be reserved for the last group only where there is danger that the increasing tension will overwhelm the vital centers. He recommends lumbar puncture from a diagnostic standpoint, in that the presence of blood-stained cerebrospinal fluid indicates definite pathology; also from a therapeutic standpoint to reduce intracranial tension. He protests against the common practice of discarding depressed fragments. He thinks they should be thoroughly cleansed in warm saline solution, broken up in small fragments, and immediately re-implanted. This is followed less frequently by epilepsy than where the cranial defect is left. He recommends the examination of the eye-grounds to determine the extension of intracranial tension. He does not discuss the operative technique. A guarded prognosis should always be given, and a prolonged period of physical and mental rest advised.

HENRY J. VAN DEN BERG.

Gilmer, T. L.: Resection of the Bone for Protrusion of the Mandible. *Surg., Gynec. & Obst.*, 1915, xx, 735.

The operative procedure was as follows: Casts of both jaws were made, also radiographs for each side of the mandible. From these the size and shape of the segments of bone to be removed to correct the deformity were calculated.

The bone was exposed at the angle. Two-thirds of the incision in the bone just back of the angle from the base upward was made with a circular saw; holes were then drilled in the bone anterior and posterior to the incisions and heavy silver wires inserted in the holes. The remaining uncut portion of the bone was removed by a rongeur and chisels.

Previous to the administration of the anæsthetic, bands were fitted to two of the teeth on each side, above and below. The two bands on each jaw were connected by bars being soldered to them, and the bands were cemented to the teeth. After removal of the segments the teeth were occluded and the bars of the lower jaw lashed to those of the upper. The heavy wires passed through the bone were then twisted, drawing the two ends of the bone into close apposition, the ends being smoothed and bent down. The soft tissues were then approximated. Since no opening was made in the mouth there was no infection, therefore there was primary union of both bone and soft tissue. The bands and wire lashings were removed in six weeks with perfect union. The result was perfect.

Müller, P.: Covering Gaps in the Skull with Bone from the Sternum (Deckung von Schädeldefekten aus dem Sternum). *Zentralbl. f. Chir.*, 1915, xlii, 409.

Bone is undoubtedly the best substance for repairing defects in the skull. The sternum is

well adapted for this purpose because it is easily accessible, the bone is spongy and a piece of the desired size and shape can easily be removed. Müller describes two cases in which he has made use of it. One was a small gap and the dura was not injured. Within a month the new bone had grown fast to the skull bone and the patient was discharged completely cured. The second was larger and the dura was destroyed. A flap of fat from above the sternum was used as a substitute for the dura; the bone flap from the sternum was applied with the periosteum outward. The bone flaps were cut to fit the gap exactly so it was not necessary to fasten them in place. The bone was flexible enough so that it could be bent to conform to the shape of the skull. The wound healed by first intention. Both operations were performed under local anæsthesia, and the results were so satisfactory that he commends the method for further use.

A. Goss.

Duval, P.: Three Cases in Which Metal Plates Were Used to Repair Skull Defects (Réparations des pertes osseuses crâniennes dans les plaies de guerre. Trois cas de prothèse crânienne par plaques métalliques). *Bull. et mém. Soc. de chir. de Par.*, 1915, xli, 1228.

Duval gives the histories of three cases in which he used metal plates to fill in gaps in the skull created by gunshot injuries. The results were excellent in all the cases and the brain is perfectly protected. The defects were extremely large; in one case 9.5 by 7.5 cm., involving the whole temporal region and extending down to the base of the skull.

In two of the cases there was cicatricial tissue involving the skin, dura mater, and cortex. He used aluminum plates 0.4 mm. thick; these were used simply because they were the only thing at hand. There will be some degree of absorption from these plates, and it might have been better to use some other metal, from which there would have been no absorption. He cut the metal plates in the shape of the wound and left little projections, which were pushed in between the tables of the skull. The technique is very simple and does not require any special instruments, which is a great advantage in military surgery. He thinks it is the best method for repairing loss of substance in the skull.

A. Goss.

Ayer, W. D.: The Pathology of Brain Tumors. *Albany M. Ann.*, 1915, xxxvi, 219.

Ayer gives a list of the tumors found in the brain, their relative frequency, origin, pathological nature, and characteristics. He says almost every form of new-growth may occur in the cranial cavity. Tuberculoma and gumma are inflammatory in nature or are infectious granulomata and not true tumors. Glioma is the most common type of true tumors. The records of the Bender Hygienic Laboratory of Albany show a series of 28 brain tumors: 12 glioma,

5 sarcomata, 1 endothelioma, 1 tuberculoma, 3 gummata, 2 cholesteatomata, 1 psammoma, 1 carcinoma, and 2 lipomata, which corresponds with reports he gives from the National Hospital, London, and from Cushing's operative cases.

He defines tumor as a new formation of cells possessing the various characteristics of the cells from which it arises and tends to proliferate continuously and without control. He then gives the various characteristics of the tumors. Glioma is rarely sharply circumscribed, but merges imperceptibly into the brain tissue which makes it often unfavorable for operative removal. Of the 12 gliomata, 3 are given as of the parietal lobe, 2 frontal, 2 cerebellar, and 5 in the basal ganglia. Sarcoma is more apt to be encapsulated and firm, and to compress and indent the brain tissue, thus being more favorable for operation. Of the 4 reported cerebral sarcomata, 3 were primary and 1 secondary. He says as a brain condition endothelioma most commonly occurs as a circumscribed growth in the dura mater. Syphiloma, or gumma, is most often found at the base of the brain, and with symptoms pointing to a tumor at this location one should suspect such a tumor. The frontal and parietal regions are the next most frequent locations. The pia-arachnoid is primarily involved with extensions into the cortex. Because of the slowness of absorption of this granulation tissue by therapeutic means, operative removal of accessible gummata may be indicated. Carcinoma is always a secondary or metastatic tumor in the brain. Tumors of the pituitary and pineal gland usually occur as simple hypertrophies or adenomata.

The characteristic appearance of a brain with a tumor is: increased intensity of the membranes, flattening of the convolutions through pressure, and a distention of the ventricles with fluid, asymmetry of the two hemispheres with increased resistance over the affected side, and increased weight.

Tumors may be found in any part of the brain and at any age. The symptoms depend almost entirely upon its location, size, and the amount of atrophied and destroyed brain tissue. Only a very small proportion afford a favorable field for surgical intervention.

CARL R. STEINKE.

Pollock, L. J.: Tumor of the Third Ventricle.
J. Am. M. Ass., 1915, lxi, 1903.

Tumors of the third ventricle are divided into three symptomatic groups: (1) tumor of moderate size situated in the floor of the third ventricle, presenting symptoms of internal hydrocephalus; (2) small movable tumors so situated as to obstruct the foramen of Munro — these are very rare, only one case having been observed; (3) tumors which either extend into the aqueduct of Sylvius, or exert pressure on the posterior portions of the cerebral peduncles and pons and give rise to (a) disturbance of ocular movements, (b) large pupils, (c) protruding eyeballs and general symptoms of tumor cerebri.

Pollock reports the case of a female, aged 48, a dressmaker, whose family and past history were negative. Eight months previous her memory became defective. She became stuporous and somnolent; was careless of her appearance, untidy, and filthy. She was troubled with dizziness and headache, and she lost in weight.

Physical examination was negative with the exception of high tension pulse. The urine showed a trace of albumin, pus and blood-cells, but no sugar.

Neurological examination showed that the patient stood with lordosis, swayed in the Romberg position, her gait was shuffling, toes pointed outward, and she walked with short increasing steps. The facial muscles were normal; there was no ocular paresis, nystagmus, or exophthalmos. Her articulation was defective and slurring.

Passive movements showed a general increase of resistance. There was a slight tremor of the fingers, more pronounced on the right side.

Coördination tests were normal. Pain and touch, heat and cold sensations were not well responded to.

The eye reflexes were normal, epigastric and abdominal present on the left, absent on the right. The Gordon sign was absent; knee jerks, increased; bilateral ankle clonus present.

The special senses were normal with the exception of a slight derangement in taste.

Noguchi and Nonne-Apelt tests of cerebrospinal fluid were negative, but the Fehling test was strongly positive.

The patient was passive, took no interest in surroundings, and did nothing spontaneously. She was entirely disoriented, retained no memory, but had no sense of falsification or delusional trend. She showed extreme mental dilapidation, but was without localization signs.

All the symptoms gradually increased and weakness became more profound until death occurred four months later.

Post-mortem examination of the brain showed a tumor of the third ventricle, composed of encysted colloid growth, occluding the foramen of Munro on the right side, and partially entering the left lateral ventricle. It compressed the right optic thalamus and dragged the septum lucidum and fornix to the right, separated the corpora albicantia and rested on the infundibulum, but did not press on the red nucleus or pineal gland. The choroid plexus of both sides were cystic.

Microscopically the tumor consisted of an encapsulated colloid cyst originating from a glioma.

This case falls into the third group of Weisenburg's classification.

P. M. CHASE.

Ransohoff, J.: The Status of Cerebral Surgery.
Lancet-Clin., 1915, cxiii, 537.

The author concerns himself with a discussion of the different diagnostic and operative methods as used in cerebral injuries, drawing his conclusions from his experience.

In this field, between what is sought and what is found there is very often the greatest discrepancy. Moreover, though trephining, *per se*, is a simple operation, yet the immediate and remote results often are astonishing. The author cites a death which occurred on the table from uncontrollable bleeding from large diploic veins, and one occurring three years after a trephine with uneventful recovery from an abscess under the area trephined.

Ransohoff objects to the modern tendency of decompressing every cerebral injury, as being unwarranted. He also shows that in 200 cases 37 per cent of the fatal ones died within 6 hours or less, and 56 per cent within the first twelve hours. He does not recall, except in one or two instances, where operation helped when the case seemed hopeless. Repeated lumbar punctures, however, are advised in these cases.

In those cases where consciousness is not lost, or there is a mild degree of coma and no grave intracranial trauma is indicated, operation is not advised unless pressure or distinct localizing symptoms supervene. Eighty per cent recover without operation. In those showing increased pressure symptoms, however, decompression will save a considerable proportion.

As regards the location of the trephine, the most common situation and the one oftenest indicated is in the subtemporal region.

In the cases of abscesses, sinusitic or otitic in origin, the otologist is far better than the general surgeon. In cerebral abscesses, recovery is likely if they are meningeal or meningocortical; death if they are deep-seated.

In the author's judgment, trephining for brain tumors has proved a disappointment. With some few exceptions, failures to find the growth outnumber the successes. This is probably due to the lateness in time of their study by competent hands, as the important symptoms are the early ones which later on are masked by those of increased tension; also to the fact that the majority of growths are gliomata, which as Virchow puts it, "simply look like overgrown convolutions."

Even with the removal of the tumor, excepting the acoustic area and the hypophysis, the end-results are not satisfactory. Ransohoff quotes three of his cases to show what the outcome is, as a rule.

In the case of cysts of the brain, often the diagnosis even at operation is so obscure that there is no united opinion as to the real condition.

The author doubts very much that the brain is as innocuous to puncture and exploration as it is supposed to be. It is well shown by the statistics of operations for brain tumors that the fatality grows with the difficulties of locating the growth. Hemorrhage and secondary softening invariably follow any exploration of brain substance.

With the exception of Cushing, who lately reported 16 deaths in 136 operations for brain tumors, the mortality runs from 38 to 55 per cent.

Although the majority of men favor the two-stage operation, the second stage under local anæsthesia, Cushing and Horsley remain antagonistic to it. The advantage of the two-stage operation lies in the fact that the trephine alone relieves the symptoms greatly, and the local anæsthesia in the second stage prevents disturbance of the cortical circulation.

In conclusion the author gives a short discussion of generalized idiopathic epilepsy from a surgical standpoint and states that it is his belief that surgery has very little to offer in this field. The idea that this epilepsy is due to a toxin the author believes very unlikely. However, further study on the brain along surgical lines is advocated.

PHILLIPS M. CHASE.

NECK

Mayo, C. H., and Plummer, H. S.: **Goiter and Life Expectancy.** *Lancet-Clin.*, 1915, cxiii, 649.

The authors believe that the only reason for total removal of the thyroid is malignant degeneration, a condition occurring in less than one per cent of the operations on more than 1,300 new cases of goiter seen in the Mayo Clinic in 1914. The pressure of simple goiter in the intrathoracic or substernal region may endanger life. Simple goiters are subject to degenerations, fibrous, cystic, or calcareous. A change may occur which produces symptoms like the worst features of exophthalmic goiter and more unfavorable as the degenerations are terminal. The intoxications from non-hyperplastic goiters may be divided into (1) those in which cardiac toxin predominates, (2) those simulating Graves' disease.

The patients in the series gave a history of having first noted their goiter at the average age of 22 and the evidence of intoxication at the average age of 36.5. The corresponding ages for hyperplastic goiter were 32 and 32.9. An oversecretion of the thyroid occurs in exophthalmic goiter as is evidenced by the ever present hyperplasia. The excess of secretion may produce the following symptoms: cerebral stimulation, vasomotor disturbances of the skin, tremor, mental irritability, tachycardia, loss of strength, cardiac insufficiency, exophthalmos, diarrhœa, vomiting, mental depression, and jaundice. Some patients die in the first months, a slightly larger number in the latter half of the first year. Operations often aided by medical treatment cure about 70 per cent of exophthalmic goiters and notably improve about 16 per cent more. The progress of the disease is checked in 4 or 5 per cent of patients operated on after the degeneration of the essential organs has become permanent. The immediate mortality in exophthalmic goiter may be placed at about 3 per cent. Two hundred seventy-eight consecutive patients were operated on at the Mayo Clinic without a death. The mortality in simple goiter is negligible, in degenerating simple goiter at least 2 per cent higher than in exophthalmic goiter. There are relapses in about 10 per cent of both exophthalmic and degenerating simple goiter.

Blair, V. P.: Indications for Operative Interference in Goiter. *J. Am. M. Ass.*, 1915, lxiv, 1896.

The author gives a brief résumé of the goiter problem, with operative indications in the different groups of cases.

Goiters cause trouble by mechanical pressure and intoxication, either of which may be very acute or very insidious. Although all goiters giving symptoms of intoxication have been grouped under "exophthalmic," later writers have divided this group into (1) true exophthalmic and (2) toxic, simple goiters. The former showing true hyperplasia and 50 per cent exophthalmos, the latter never.

Goiters are now divided clinically into (1) true exophthalmic; (2) toxic, simple; (3) non-toxic, simple; (4) simple; (5) inflamed; (6) malignant.

Kocher first advocated partial excision of the thyroid in the exophthalmic, and today this principle is generally accepted. There is always a proportionate reduction of the toxicity.

Failures are due to (1) mistaken diagnosis; (2) "burnt out" goiters with permanent degenerative changes; (3) removal of an insufficient amount of thyroid tissue. Blair recommends the initial removal of a lobe and a half.

Operation at the height of a crisis is inadvisable, and the crisis should be tided over by galvanism, or ligation of arteries, until a subsidence of the active toxic symptoms.

The rôle of the thymus in goiter, the author believes, is at present an open question. Prominent operators are found on both sides of the question.

Toxic, simple goiters are to be treated by excision of the more evidently diseased parts of the gland. Results of radical operation are usually excellent, but care must be taken to make an exact diagnosis. This also applies to the true exophthalmic group.

Only the ordinary adolescent, and certain non-degenerating, colloid goiters of the non-toxic, simple group are amenable to medical treatment. Surgery should be applied only in exceptional instances; i.e., pressure, interference with recurrent nerve, rapid growth, substernal growths, and pain.

Malignant goiters, if movable, should be removed, but the diagnosis is usually made post-operative.

In pregnancy, with exophthalmic goiter, either death or spontaneous recovery is likely to occur toward the end of the pregnancy. Operation, other than simple ligation, is usually followed by abortion.

The conclusions are as follows:

1. Active, toxic, simple goiters and exophthalmic goiters should be reduced in size or activity by some sort of operation.
2. Adolescent goiters, with exceptions, require no surgery.
3. Simple goiters are handled according to the indications of the case.
4. Pregnancy greatly increases the radical, operative risk.

P. M. CHASE.

Jehn, W.: Operative Removal of Large Intrathoracic Goiters (Die operative Entfernung grosser intrathorakaler Strumen). *Deutsche Ztschr. f. Chir.*, 1915, cxxxiii, 25.

Jehn describes five cases of operation for large intrathoracic goiters, weighing up to 500 gms. The most prominent symptoms in these goiters are due to pressure on the trachea and veins, causing dyspnoea, cyanosis, and venous stasis. The operation was rendered much easier by the use of a positive pressure apparatus; the dyspnoea disappeared, the patients breathed quietly, hæmorrhage was slight and air embolism was prevented.

The tumors were so vascular that it would have been very dangerous to divide them, so they were shelled out intact. A longitudinal slit was made in the manubrium about 4 to 6 cm. long, and this widened the upper opening of the thorax about 1.5 cm., making the removal of the goiter easy. This procedure is preferable to splitting the entire sternum and removing the goiter through the cleft.

Four of the operations were performed under local anæsthesia, and the author now thinks that it would have been better to perform the other one in this way too. All of the patients were greatly relieved by the operation, but one of them died of pulmonary embolism three weeks after the operation. She had been in a practically hopeless condition with attacks of suffocation when admitted to the hospital.

A. Goss.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Marshall, H. W.: Late Results of Surgical Treatments for Flexed Scapulæ. *Boston M. & S. J.*, 1915, clxxii, 812.

Anatomical variations of the scapulæ are very common, and extreme degrees of these peculiarities often possess pathological significance. The patients having these pathological conditions fall under three groups: (1) those who should receive prompt surgical care; (2) those who should delay

having operative interference; (3) the borderline class. Under the first group the author includes patients of adult age whose painful symptoms are of several years' duration, associated with otherwise fairly good health. In addition, there should be localized tenderness, combined with abnormal crepitus of the shoulder-blades. In addition, extremely acute cases of shorter duration should be included in this group. The non-operative group comprises adult cases of moderate severity who have received no treatment, and youthful patients

who have mild symptoms. The last more doubtful group contains the moderately severe types of one to six months' duration, mild cases of several months to one year's duration, and the class of neurasthenic, debilitated patients who present signs of scapular irritation. The author cites the histories of 11 cases and summarizes them as follows:

Six of the 11 patients operated on returned for observation and 2 reported by letter. Six of these 8 thought they had been much benefited, 1 could not make up her mind, and 1 said she could use her arms just as freely as before the surgical treatment. The 3 persons who had not been heard from recently were all improved when they were seen soon after leaving the hospital. None say they are any worse, and no weakness or other objectionable after-effects that can be ascribed justly to surgery have been discovered in any of them. With regard to time for recovery, acute symptoms in all subsided by the time the operation wounds healed sufficiently to permit the patients to leave the hospital; and in three months the large majority had good function in the shoulders again. In a year's time some of the most protracted cases had been perfectly relieved.

Neurasthenic pains in the arms in growing or debilitated persons were not relieved by scapular operations.

Non-operative treatments—shoulder-braces, medicinal tonics and eliminants, hydrotherapy, and exercises—should always be tried first for a month or more whenever circumstances permit. Many mild cases recover without surgery, and the latter should be employed only when subsequent advantages seem to overbalance the slight dangers and inconveniences of the operation itself, and when patients seem to be of suitable type. The most favorable cases are middle-aged persons otherwise in good health, and the most unfavorable conditions are found in young individuals from fourteen to eighteen years of age who are nervous and debilitated.

DEFOREST P. WILLARD.

Willensky, A. O.: Empyema of the Thorax. *Surg., Gynec. & Obst.*, 1915, xx, 647.

Following the plan outlined in the first paper of the author's series, a critical study is made of 82 cases of chronic empyema sinus, which were treated at Mount Sinai Hospital, New York, in the last ten years.

The author believes that the great majority of the cases are due to faulty mechanical conditions in the thorax, or to primary conditions in the lung which have not been remedied. In the minority of cases the chronic sinus results from some fault in technique. The conclusions drawn are as follows:

1. In 75 per cent of the patients the cause for the formation of the chronic sinus was present from the very inception of the disease. These can be grouped as follows:

(a) Fifty-two per cent had uncollapsible cavities.

(b) Seven per cent had lung abscesses, or broncho-pulmonary fistulae, or both.

(c) Fifteen per cent were tubercular in origin.

2. Excluding the tubercular cases, which present a special problem—that of the cure of tuberculous infection—60 per cent of the patients owed their chronic sinuses to conditions which were present and not remedied at the primary operation.

3. The method of operation for acute empyema must permit of a thorough examination of conditions in the chest, and the removal or correction of any lesion which tends to the formation of chronic sinuses.

4. The remaining 25 per cent of the patients owed their chronic sinuses to faults in the after-treatment, which with good care can and should be eliminated.

Zinn, W., and Geppert, F.: Pneumothorax Treatment of Pulmonary Tuberculosis (Beitrag zur Pneumothoraxtherapie der Lungentuberkulose. *Beitr. z. Klin. d. Tuberk.*, 1915, xxxiii, 111.

Zinn and Geppert discuss 85 cases in their practice in which pneumothorax treatment was indicated; in 21 it could not be applied on account of pleuritic adhesions, leaving 64 cases treated by pneumothorax. Complete collapse of the lung was attained in 31 of these, incomplete but effective collapse in 26, and judgment is still suspended in 7. As to results, 7 of the cases were clinically cured, 17 or 37.5 per cent much improved, most of them able to return to work, 5 were unaffected, 2 were unfavorably affected so that the treatment was given up, 9 died during treatment, but most of these had been hopeless cases to start with, and 24 are still under treatment. As to complications, there was sterile exudate in 22 cases, sterile empyema in 4, infected empyema in 3, perforation of cavities in 3, great displacement of the mediastinum in 6, slight hæmoptysis in 7, fever after the insufflation of the gas in 12, secondary adhesions in 4, further progress of the disease on the other side in 3, and air embolism in 1. The cases are presented in tabulated form and the article is followed by a bibliography of 70 titles.

Pneumothorax is indicated in a comparatively small number of cases, but in view of its results in cases that are hopeless by any other method, it is of great value. It is indicated in chronic unilateral tuberculosis with diffuse infiltration and beginning destruction of lung tissue. No matter how severe the process on one side the treatment is hopeful if the other side is sound or nearly so. As the method is harmless Forlanini is urging its use in earlier cases than formerly. It should not be used in acute cases, especially caseous pneumonia. It is contra-indicated if the pulmonary tuberculosis is complicated by tuberculosis of the intestine, kidneys, bones, or joints. It is also contra-indicated in heart-disease.

Brauer's incision method is preferred to the puncture method as it offers no especial difficulty and is much safer. The amount of nitrogen in-

jected at first averaged 700 to 800 ccm. They no longer use more than 1,000 ccm. for the first insufflation and seldom less than 500. Two patients were so excited as to require chloroform anaesthesia; local anaesthesia was sufficient in all other cases. The next insufflation takes place generally after two or three days, using 400 to 500 ccm. of nitrogen. After that insufflations are given at intervals of about a week for $1\frac{1}{2}$ to 2 months, when complete collapse is attained. After that insufflations are given every two to four weeks throughout the treatment, which lasts a year or more. Of course the details must be varied to suit the case, and every case must be kept under clinical and röntgen observation throughout treatment. To attain the desired results the lung must be kept absolutely at rest.

The development of an exudate does no harm and may even exert a favorable effect, as it aids in the compression of the lung. It was necessary to puncture for the exudate in only a few of the authors' cases. Brauer recommends frequent puncture, but they undertake this only if there is fever or signs of too great pressure.

Of course the usual hygienic treatment should be given in conjunction with pneumothorax, and it is useless to give it in cases of such limited intelligence or where the economic conditions are so poor that hygienic rules will not be carried out.

A. Goss.

Jessen, F.: Operative Treatment of Pulmonary Tuberculosis (Die operative Behandlung der Lungentuberkulose). *Würzburg. Abhandl. a. d. Gesmtegeb. d. prakt. Med.*, 1915, xv, 63.

Advanced pulmonary tuberculosis is not only a constitutional and bacterial disease, but it also offers a mechanical problem, which surgery has attempted to solve. Though the results of surgery cannot be so good as they are in other diseases where the general condition is better, still surgery is justified in advanced cases of tuberculosis that show no signs of yielding to other methods of treatment. The surgical methods that have been advocated and used are: (1) extirpation of the tuberculous lung; (2) opening of cavities; (3) artificial pneumothorax; (4) extrapleural thoracoplastic operations; (5) pleurolysis and plugging cavities; (6) section of the phrenic nerve and stretching of the sympathetic; (7) ligation of the pulmonary artery; (8) operations on the upper opening of the thorax, such as Freund's and Henschen's.

Extirpation of the tuberculous lung is seldom successful, because it is seldom that one lobe alone is involved to the exclusion of the others. The author also thinks the chances of success by opening tubercular cavities are slight. He considers artificial pneumothorax as probably the most successful surgical method of dealing with pulmonary tuberculosis and devotes more than half of his monograph to its discussion, reviewing the history, technique, and indications. When used for the proper indica-

tions, that is, in unilateral disease with very slight adhesions, he has found it successful in about 30 per cent of the cases to the extent of restoring the patients so they are able to return to work. In cases where pneumothorax cannot be performed on account of extensive adhesions plastic operations on the thorax are indicated. Of the various methods which are described the author prefers Sauerbruch's, which is a complete thoracoplasty; that is, removal of segments of all the ribs through a hooked incision which is really the posterior part of Schede's incision. This allows complete collapse of the thoracic wall and therefore complete compression of the lung. Brauer and Friedrich's and Wilms' operations are less extensive and also, he thinks, less effective. As the operation is such a severe one it should be used only where pneumothorax is impossible and where there is little hope of the patient's recovery without it.

A less severe method which has given excellent results in some cases is, after resection of a rib, to separate the pleura from the inner wall of the thorax, and fill the cavity with some suitable material, usually paraffin or fat tissue. This operation is indicated in cases of localized cavities and in cases where pneumothorax is impossible and where thoracoplasty is impossible or unnecessary. It has been suggested that the lung can be placed at rest by cutting the phrenic nerve, and good results have been reported by several surgeons. Jessen thinks that section of the phrenic does paralyze that side of the diaphragm, but that the effect on the lung is slight. It should be used as a supplement to other operations, rather than as an independent operation. Attempts have also been made to produce contraction of the lung by cutting off its blood supply by ligating the pulmonary artery. Schumacher thinks that this is a less dangerous operation than thoracoplasty, and that in some cases it is a good preliminary operation to thoracoplasty, because the contraction produced by it prevents aspiration pneumonia and fluttering of the mediastinum, but it is often difficult to get at the artery because of adhesions and cicatrization. The operations of Freund and Henschen on the upper opening of the thorax are based on the idea that stenosis of the upper opening of the thorax predisposes to disease of the apex. Freund proposes to overcome this by sectioning the first costal cartilage. Henschen resects a piece of the paravertebral arch of the first and second ribs. Jessen thinks that section of the first cartilage has an unfavorable rather than a favorable effect on apical tuberculosis as it does not produce better aeration of the apex, and conduces to movement rather than rest of the apex, which is indicated.

There is no doubt that surgery of the lung saves many patients from death for varying periods and restores them to a much better condition than they could have enjoyed without it. The treatment of the future will be a combination of climatic and chemical with operative treatment. A. Goss.

Leschke, E.: Treatment of Empyema by Irrigation Drainage (Über die Behandlung der Brustfelleiterung mit Spüldrainage). *Berl. klin. Wchnschr.*, 1915, lii, 549.

Two methods of treatment of empyema have heretofore been used: rib resection and siphon drainage. The former is a rather serious operation and produces pneumothorax; the latter does not entirely empty out the pus.

Leschke proposes a method which he claims obviates these difficulties. The wall of the thorax is anesthetized and two trocars are introduced and then withdrawn and catheters inserted into the openings. The pus flows out slowly, and what does not come out spontaneously is removed with an aspirator. One catheter is then connected with an irrigator and the other with a tube filled with water, the tube being immersed in a bucket of water beside the bed. The pleural cavity is then irrigated, slowly so as to avoid variations in pressure and compression of the lung. The author has used physiological salt solution, though it is possible that mildly antiseptic solutions might be used with advantage. Irrigation should be continued until the water comes out clear. In the beginning sometimes as much as five liters is necessary, but the amount grows less as the suppuration decreases. Two to four irrigations are given daily.

After the irrigation has been completed the catheter connected with the irrigator may be used for siphon drainage, by connecting it with the vessel of water by means of a tube filled with water. The catheter should always be clamped before removing the tube to avoid the entrance of air into the pleural cavity. Two cases are described, one of empyema following pneumonia and the other of pyopneumothorax, roöntgen pictures being given of both prior and after-treatment.

A. Goss.

Borelius, J.: The Treatment of Metapneumonic Empyema (Die Behandlung der metapneumonischen Empyeme). *Nord. med. Ark. (Kirurgie)*, 1915, xxv, Part 2, No. 8.

In regard to the treatment of tuberculous empyema and the septic or putrid type there is considerable uniformity. All agree that the latter is best treated early with thoracotomy, while the former is treated by thoracocentesis if any direct treatment is necessary. In regard to the treatment of pneumococcic or metapneumonic empyema, however, considerable difference of opinion exists. Experience, however has taught that these ailments may be cured by simple paracentesis alone, especially in children, among whom this form of empyema is very common.

The author reports 34 cases of metapneumonic empyema, of which 27 were cured and 7 died. Of 5 cases treated with thoracocentesis, 4 were cured and 1 died, duration of treatment averaging 37 days. Twelve were treated with primary thoracocentesis and secondary thoracotomy; of these 10 were cured and 2 died, duration of treatment being 107 days.

Seventeen were treated with primary thoracotomy; of these 13 were cured and 4 died, time of treatment averaging 52 days.

Thoracocentesis was performed in cases in which only a small amount of pus was present, the largest quantity aspirated being 900 ccm. It was repeated once or twice, but if the temperature and general condition of the patient and the focal findings did not improve, thoracotomy was performed. Of the 17 cases in which primary thoracotomy was performed, 4 died; the death, however, being due, not to thoracotomy, but to other complicating causes. The reason why these were treated with primary thoracotomy is that aspiration was a failure in a number of cases on account of the thick pus; in others the extent of the empyema and the poor general condition of the patients necessitated it. It is evident that the severest cases are in this group; therefore the good results obtained and the shorter time required for healing are all the more surprising. From these results it may be concluded that metapneumonic empyema if treated by primary thoracotomy heals faster than if preceded by one or several thoracocentesis operations. But as this is only the result of one clinic the subject should be investigated further.

L. A. JUHNKE.

TRACHEA AND LUNGS

Voorhees, I. W.: The Importance of Early Tracheotomy. *Internat. J. Surg.*, 1915, xxviii, 110.

The author makes a plea for early tracheotomy and recommends the procedure as a life-saving measure only when it is performed before evidence of stenosis becomes manifest in the dusky face, cold sweat, and feeble, rapid pulse.

The following conditions which sometimes call for tracheotomy are mentioned: (1) a foreign body not removable by upper bronchoscopy; (2) œdema of the laryngopharynx from whatever cause; (3) laryngeal diphtheria; (4) intrinsic growth of the larynx (cancer); (5) extrinsic growths, as goiter; (6) paralysis of the laryngeal separator group of muscles; (7) syphilis; (8) phlegmon (retropharyngeal abscess); (9) tuberculosis; (10) perichondritis; (11) scleroma (rhinolaryngo-scleroma); (12) leprosy.

OTTO M. ROTT.

Jackson, C.: A Fence Staple in the Lung; a New Method of Bronchoscopic Removal. *J. Am. M. Ass.*, 1915, lxiv, 1906.

The patient a male, aged 44, had aspirated a fence-wire staple into his right lung 15 days previous to his examination. X-ray showed the staple in a posterior branch of the inferior lobe bronchus, 4 inches below the tracheal bifurcation.

The bronchoscope, passed under local anesthesia, revealed the staple firmly held, its sharp points being embedded in the mucosa which was much swollen, preventing its direct removal. However, it was loosened downward; then with hooks, side-curved forceps, and the end of the bronchoscope

it was lifted about 1 cm. to where two suitable openings of branch bronchi admitted the points of the staple. The staple was then seized by the rounded end and gradually rotated with points in the branch bronchi until extraction could be made.

The operation consumed one hour and twenty minutes. No rise of temperature or pulse followed, and three months later the patient was perfectly well.

P. M. CHASE.

PHARYNX AND ŒSOPHAGUS

Meyer, W.: Resection of the Cardia for Carcinoma. *Tr. Am. Surg. Ass., Rochester, Minn., 1915, June.*

Meyer stated that he offered his report with some hesitation, inasmuch as the two patients upon whom the operation was performed did not recover. However, he is so fully convinced, not only of the feasibility of the work, but of the possibility of a more frequent recovery from operation than has hitherto been observed, that he felt impelled to write the paper.

He first referred to five resections of the cardia followed by operative recovery. They were the cases of Voelcker, Kümmel, Sauerbruch, Zaaier, and Ach, each done by a different method which he illustrated by lantern slides.

He then told of his own experience with two operations done in the course of the winter, one at the Post-Graduate, the other at the German Hospital.

He emphasized the necessity of doing the operation in stages, at least so far as our present knowledge goes: the first to represent gastrotomy with careful palpation of the pathologic conditions at and around the cardia; the second to consist in attacking the tumor from the abdominal cavity, if the healthy portion of the œsophagus above the tumor can be reached from below. He strongly advises following the method of Ach, according to which the proximal stump is extracted from the posterior mediastinum through an œsophagotomy wound at the neck and so transposed downward

under the skin of the chest. Meyer carried out the extraction method in both instances, but each time was forced, by adverse conditions found, to add a thoracotomy at the same sitting. However, abdominal section plus thoracotomy plus œsophagotomy evidently is too much for these reduced patients to stand at one time. In his second case the intratracheal insufflation did not work satisfactorily and was seemingly the principal cause of the fatal issue. In both his cases the work had to be done in the presence of and with preservation of a preëstablished gastric fistula, a point which did not have to be considered by the operators whose cases were reported.

Meyer stated that Ach carries out the extraction method by means of a wire loop introduced to the stump of the resected œsophagus, which loop is then pierced with needle and thread. The latter is knotted and serves to withdraw the œsophagus from the posterior mediastinum. However, this kind of procedure adds an element of sepsis, and Meyer therefore constructed a new œsophageal extractor which obviates this drawback. He tested it in the dog with entire satisfaction and stated that he saw no reason why it should not work equally well in the human subject. All the steps of resection of the cardia, as witnessed in his two cases, also of the new instrument and of Ach's extraction method were illustrated by lantern slides.

Meyer further dwelt on the importance of an early diagnosis in cancer of the œsophagus, which in conjunction with the proper operative method and apparatus for the avoidance of pneumothorax, now at our disposal, should induce the surgeon to attack these cases oftener. There certainly is no longer any reason why a movable growth at the cardia should be considered inoperable, when every surgeon would resect such a tumor if located at the pyloric end of the stomach. In conclusion, he repeated that it is not the location of the tumor which decides the operability or inoperability of the case, but the conditions found by the palpating hand of the surgeon when performing gastrotomy.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Bruce, H. A.: Diffuse Septic Peritonitis. *Canad. Pract. & Rev., 1915, xl, 217.*

The author gives an excellent account of his personal experience in dealing with forms of diffuse septic peritonitis. He uses the word "diffuse" in describing peritonitis because universal peritonitis is extremely rare, whereas the diffuse or localized forms are frequent.

He takes up in turn the etiology causing peritonitis, and discusses at length the appendix, gall-bladder perforations, gastric and duodenal ulcers, as well as traumatic injuries of the intestines, and, lastly,

pelvic infections. He lays emphasis on the much better prognosis in the perforation of the gall-bladder whose contents are septic in comparison with the perforating empyema of the gall-bladder. He draws attention to the fact that bile and intestinal juices have a deleterious effect on the resistance of the peritoneum. He mentions the possibility that diffuse peritonitis may result without perforation of the gall-bladder, merely by organisms penetrating its wall. Pancreatitis may cause wide-spread peritonitis without any infecting organism being discovered. He also mentions cases of peritonitis associated with acute appendicitis without perforation of the appendix, which, however, are extremely

infrequent. He calls attention to the difference in the prognosis between the leakage from an old pyosalpinx where the infection has died out, in contrast to the leakage from an acute pyosalpinx where the mortality is much higher.

He calls attention to the fact that pneumococcic peritonitis cases not infrequently develop septicæmia, and lays emphasis on the principal points of diagnosis in this condition; namely, that the disease is of a fulminating character from the beginning, without premonitory symptoms, and the patients constantly show diarrhoea with a very high temperature.

The bacteriological examinations of the exudate of peritonitis show in general a mixed infection, so that attempts to classify the different infections due to a single organism have met with more or less failure. He enters at length into the symptoms and diagnosis of peritonitis and finds that the most reliable point in the diagnosis is the rigidity of the abdominal muscles, the extent rendering it possible to distinguish between slight and severe peritonitis. This sign, however, may be lacking in certain special cases and he draws attention to the fact that it also occurs in pneumonia. The most helpful symptoms in order of importance are pain and tenderness on pressure. In appendicular peritonitis a history of perforation pain is significant in that it frequently indicates the time of onset of the peritonitis. The sudden cessation of pain with appendicitis always makes one suspicious of rupture of the organ. He finds the condition of the pulse and temperature not absolutely reliable signs as to the extent or severity of the peritonitis. In peritonitis due to rupture of the intestines the character of the rigidity may be a valuable guide, as that due to the contusion of the muscles alone usually disappears within six hours. In such cases operation is demanded in case severe abdominal pain persists more than six hours if it is accompanied by vomiting, a rise in pulse, progressive localized rigidity, and local tenderness on superficial respiration. In perforation of gastric or duodenal ulcers the pain is usually localized in the epigastrium, followed by profound shock with the characteristic rigid scaphoid abdomen. When severe distention supervenes in these cases it indicates a state of peritonitis so advanced that recovery can scarcely be expected to result from any form of treatment.

He lays stress on the importance of defensive reaction of the peritoneal serosa in determining the prognosis for recovery. It is more favorable where the reaction is massive and less where there is a proportionately small amount of reaction. He quotes Rutherford Morisson in stating that the prognosis is invariably bad if cyanosis is present, the extremities cold, with a pulse-rate of over 120. He advocates immediate operation in all cases as soon as peritonitis is diagnosed, even in cases *in extremis* where it is not absolutely certain whether or not the patient will die if an operation is undertaken, but where it is certain they will surely die unless the operation is done.

In regard to treatment he lays especial emphasis on early diagnosis and, secondly, on the rapidly performed operation carried out without undue shock to the patient. The author does not advise morphia for the relief of abdominal pain until the diagnosis has been made, because of the possibility of masking the symptoms. The one exception to his rule for early operation is in the case of pneumococcal peritonitis in which he thinks it advisable to delay the operation until an abscess has formed, as fatal results have frequently followed surgical intervention in the early state. In regard to peritonitis resulting from gunshot wounds he quotes Beavis and Souttar, who write from the British Field Hospital in Belgium. Because of the marked injury to the intestines caused by the bullets being fired at a closer range the mortality is practically 100 per cent in those cases not operated upon, whereas the results have been especially encouraging in cases operated upon within six hours after the injury was received.

In regard to the technique of the operation he draws attention to making the incision over the site of the primary lesion if this is possible, otherwise in doubtful cases it should be made in the midline—immediately below the umbilicus. In this site it is easy to enlarge upward. All unnecessary manipulations of the intestines are to be avoided. He does not advocate washing out or sponging out the septic material from the peritoneal cavity because of the protective action of this exudate and because the endothelial lining is rendered more susceptible by the traumatism. He gives as the most influential factors in improving the results of operation for diffuse peritonitis, the following:

1. The general adoption of Fowler's semi-sitting position.
2. The injection of large quantities of salt solution either subcutaneously or by the rectum.
3. Lavage of the stomach.
4. Reduction of the duration of the operation to a minimum.

He advocates the removal of the appendix in every instance in case this is the primary focus, with a minimal amount of injury to the peritoneum.

For drainage he advocates the use of a combination of cigarette drains with soft rubber tubes, using the soft rubber tubes split and containing a wick of iodoform gauze. The author thinks that drainage tubes should be changed frequently, the tube inserted in each successive occasion to be of smaller caliber than the preceding one. He does not advocate closure of wounds, rather relying on drainage in every case.

He heartily advocates the Fowler position for the reason that it reduces the absorption of toxin material because of the lessened permeability of the lymphatics in the peritoneal cavity. He uses the Gatch bed to hold the patients in this position.

In regard to the post-operative treatment he draws attention to the treatment of giving suitable amounts of fluid by the Murphy drip method. In

cardiac collapse he used intravenous salt solutions. Turpentine stupes sometimes give relief where there is marked abdominal distention. He does not advocate the use of morphia because he thinks it increases toxæmia.

In discussing Ochsner's treatment he draws attention to the fact that it is not intended to replace surgery, but merely to tide the patient over to a safer period for operation when for any reason it is impossible to operate immediately. Among the complications of diffuse septic peritonitis the author lays special emphasis on intestinal obstruction occurring in either one of two forms: (1) paralytic ileus or (2) mechanical obstruction. In case the paralytic ileus is due to a slight or localized peritonitis it may be relieved by saline cathartics, enemata, and drugs which relieve peristalsis. The author under these circumstances advocates the use of salicylate of physostigmine. At the time of operation if it is seen that the intestines are distended and thinned the author advocates immediate cæcostomy or ileostomy, claiming that his results have improved materially since undertaking this procedure. In regard to the mechanical obstruction he urges a careful watch for symptoms which usually occur at the end of a week to ten days and urges that immediate operation be undertaken to relieve the condition before the patient becomes exhausted. Subphrenic abscess and empyema of the pleural cavity are dealt with by the appropriate recognized means when they appear, by drainage. The diagnosis of subphrenic abscess is rendered easy by recognizing the increasing fever, the rigidity and pain over the liver region, and the pushing down of the liver by the collection of fluid between it and the diaphragm. Extension of a subphrenic abscess along the surface of the diaphragm often leads to a basal empyema, which when diagnosed should be evacuated by excision of part of the rib.

He quotes various statistics from the literature since 1885. The mortality of diffuse septic peritonitis, which was 97 per cent, has gradually dropped with improvements in technique, early diagnosis, and post-operative care until it now ranges somewhere in the region of 10 per cent. The author claims in his private cases during the last three years a mortality rate of 5 per cent.

In summing up he emphasizes the following points: the necessity for early operation in all cases of acute peritonitis; importance of rapidly performed operations with as little manipulation of the intestines as possible; use of the Fowler position; the necessity of a careful watch for mechanical obstruction with immediate operation in case this should supervene.

HARRY G. SLOAN.

Mercadé, S.: Treatment of Acute Diffuse Peritonitis (Traitement des péritonites aiguës généralisées). *J. de chir.*, 1914, xiii, 145.

All surgeons are agreed that laparotomy is indicated in acute diffuse peritonitis, but the laparotomy is only the first step in the treatment; after that the

surgeon must consider the further treatment of the peritoneum, also treatment of the general intoxication, the paralysis of the bowel and stomach, and the heart weakness. The general intoxication is best treated by lavage of the blood by means of salt solution given through the rectum by the drop method. Either plain boiled water or sea water may be used. The sea water seems to have a more stimulating action, but plain water seems to promote diuresis more effectively.

Solutions of sugar do not have much diuretic action but they are nourishing, stimulating, and tonic. Schiassi prefers to use for the purpose a solution consisting of 6.5 parts sodium chloride, 0.3 part of potassium chloride, 1 part fused calcium chloride, 0.5 part sodium bicarbonate, 50 parts glucose, 15 parts alcohol, and 1,000 parts distilled water.

Injection of serum has been employed by some surgeons with excellent results. Various methods are given for treating intestinal paralysis, including puncture of the intestine, preventive enterostomy, the use of the rectal sound, hot irrigations of the intestine, electric enemas, injections of strychnine, eserine, or hormonal, and secondary enterostomy. The use of electric enemas deserves more attention than has been given it. They are of great value in overcoming dynamic ileus; they are harmless and act promptly. They should be begun early, so that if they fail after two or three applications other methods may be resorted to.

If the paralysis extends to the stomach, Grosser and others advocate the use of a retention stomach tube 4 to 8 mm. in diameter passed through the nose. As much as four or five liters of fluid may be removed from the stomach in 24 hours. Fluid should be given by hypodermoclysis or per rectum to replace this. The heart may be stimulated by camphorated oil, ether, sparteine, or even caffeine. There are many weapons to be used in the after-treatment of acute diffuse peritonitis, and the danger is in using too many rather than too few. The after-treatment demands the surgeon's closest attention and a readiness to meet any emergency.

A. Goss.

Moschcowitz, A. V.: The Pathogenesis of Umbilical Hernia. *Ann. Surg.*, 1915, lxi, 570.

Moschcowitz in considering the structures of the umbilical region points out that all the vessels escaping from or entering the abdominal cavity lie between the peritoneum and the transversalis fascia; that the openings through this fascia are not bounded by sharp edges but that the fascia is everted and prolonged onto the vessels in the form of an adventitia.

The transversalis fascia in the umbilical region is especially strong, as pointed out by Rickets, and this fascia is pierced in this locality by the two hypogastric arteries and the urachus below, while above the umbilical vein has its exit.

It is possible to have a hernia through either one

of these four openings, or in the absence of a well-developed Ricketts' fascia to have a hernia through the center of the umbilicus.

The most common umbilical hernia is that through the opening for the vein, for the reason that the two arteries and the urachus are bound together by a mass of firm connective tissue, which the vein lacks, and the latter is constantly being pulled away from the upper margin of the umbilical ring by its attachment to the two arteries and the urachus.

D. L. DESPARD.

Turner, G. G.: The Radical Cure of Hernia. *Med. Press & Circ.*, 1915, cl, 608.

Turner has followed up the after-histories of his patients for the purposes of statistics.

Up to the close of 1914 he had done 720 operations for external hernias of all varieties. There were 36 deaths, 5 per cent. There were 151 cases of strangulation with 31 deaths, 20.52 per cent; radical cures 569 with 5 deaths, or 0.87 per cent. Of the radical cures 389 were inguinal, 64 femoral, 43 umbilical, 66 ventral, and 7 of other varieties.

As to the cause the author favors the congenital theory. He believes that the development of a hernia in an adult means that some content of the belly has come down into a preformed sac.

The indications for operation have been so extended that it is easier to discuss contra-indications. The chief exceptions are exceedingly fat persons "who are getting fatter." Also those afflicted with constitutional diseases.

In the treatment of inguinal hernia, his operation varies with the age of the patient. In patients up to 2 years of age, he merely removes the sac and puts one suture through the pillars of the ring. Between 2 and 12 years of age after removal of the sac he sutures the conjoint tendon to Poupart's superficial to the cord and overlaps the external oblique.

In adults he uses Bassini's operation. Turner feels that the complete removal of the sac is the first essential for radical cure. During straining efforts the muscles tend to close the canal. The wound is dressed with a spica bandage. This method in the hands of the author has been more successful than any of the open methods. He advises rest in bed or on a couch for 3 weeks and no heavy work for 2 or 3 months after the operation.

In women where the fundus of the sac extends into the vulva, it is better to cut it across rather than attempt to dissect it out because of hæmorrhage. When the round ligament is not readily removed he ligates it with the sac.

In femoral hernias he removes the sac and sutures Poupart's ligament to Couper's ligament with 2 sutures of heavy catgut. He uses an incision parallel to Poupart's and one-half inch below it.

In umbilical hernia operation is always advised because of the great risk of strangulation. In 43 operations for radical cure there was 1 death; in 24 strangulated cases there were 9 deaths.

In tense abdomens it is advisable to place the patient on a preliminary dietetic treatment and to regulate the bowels so as to reduce flatulent distention.

Turner prefers the Mayo operation. He makes no attempt to separate the various layers of the parieties.

J. R. BUCHBINDER.

Moschcowitz, A. V.: The Indications and Contra-Indications for the Operative and Truss Treatments of Hernia. *Am. J. Surg.*, 1915, xxix, 197.

The author enumerates only the most important contra-indications for the radical cure of hernia by operation and emphasizes the importance of careful physical examination in order to insure against possible surprises. The contra-indications are as follows:

1. All complicating diseases of sufficient gravity, such as florid syphilis, advanced pulmonary tuberculosis, etc.
2. Acute infectious diseases.
3. Diseases of the respiratory tract, especially such as chronic emphysema, chronic bronchitis, etc.
4. Uncompensated valvular lesions.
5. Diabetes only in those cases which cannot be made sugar free.
6. Affections of the kidneys, unless the operation is done under a local anæsthetic.
7. Dermatological conditions which are a bar to an operative asepsis.
8. Acute urethritis of gonococcal origin.
9. Tight urethral strictures, unless first dilated.
10. Early infancy.
11. Very advanced age.
12. Extreme size of the hernia.

Important as these contra-indications are, they are absolutely negligible in the presence of strangulation if mild and gentle taxis has failed to reduce the contents. In the presence of such strangulation there are absolutely no contra-indications.

Moschcowitz believes that in the "palliative treatment" of hernia in patients with the so-styled contra-indications of a permanent nature a truss, suitable and correctly fitted, might be an advantage in some cases, but he has no hesitancy in stating that a radical cure, in the accepted surgical sense, is of such exceptional rarity as not to merit serious consideration. It should be the physician's duty to assure himself that the truss retains the hernia at all times, maximum pressure being applied at the internal ring. The hernial contents must be completely reduced prior to the application of the truss, otherwise the wearing of the truss is absolutely contra-indicated. While the author is convinced of the final excellent results of an operation for this condition when uncomplicated and performed in a modern hospital and by experienced hands, he does not urge operation in every case that comes under his observation, but follows the following routine:

1. A complete history is taken, particular stress being laid upon the complaint of the patient, especially in regard to the hernial symptoms.

2. An exact anatomical diagnosis of the variety of the hernia is made.

3. A thorough physical examination is made.

4. No contra-indication to operation being found, either in the general or local condition, an operation is advised.

He makes it a rule not to advise against the use of trusses except in those cases in which there is an absolute contra-indication to their use, for instance, in irreducible hernias, or in the presence of an undescended testis, or in the presence of such hernias in which physical examination leads him to believe that there will be insurmountable difficulties in the retention of the hernial contents. He also impresses the patient with the fact that he does not regard the truss treatment curative in any sense of the word.

E. C. ROBITSHEK.

Mayerhofer, E.: Diagnosis and Treatment of Arterioesenteric Occlusion in a Child (Zur Klinik, Diagnose, und Therapie des mesenterialen Darmverschlusses im Kindesalter). *Med. Klin.*, Berl., 1915, xi, 642.

Mayerhofer describes the case of a boy of 8 who had intense spasms of pain following what was apparently a simple catarrhal disease of the stomach. He seemed to be improving under medical treatment, but after a slight error in diet the attacks of pain returned. The surgeons were unable to make a definite diagnosis; the conditions considered were occlusion from a foreign body, stenosis from ulceration, invagination, lead poisoning, and pylorospasm. In view of the impossibility of deciding on the diagnosis and the child's very poor condition, operation was not performed and the child died. Autopsy showed that the bowel was constricted by the mesentery, and a prompt gastro-enterostomy might have saved the child's life.

Some cases described as umbilical colic may be this form of intestinal occlusion. It is noteworthy that the boy found relief by getting up on his knees and boring his head into the pillow; this position relieved the constriction of the bowel, and in mild cases is to be recommended as a method of treatment. In severe cases laparotomy should be performed at once.

A. Goss.

GASTRO-INTESTINAL TRACT

Sippy, B. W.: Gastric and Duodenal Ulcer; Medical Cure by Efficient Removal of Gastric Juice Corrosion. *J. Am. M. Ass.*, 1915, lxi, 1625.

The patient remains in bed for from three to four weeks. Unless some serious complication is present, some or all of his regular work may be done at the end of four or five weeks. A wide variety of soft and palatable foods may be given. The following plan of diet has been found most adaptable: Three ounces of a mixture of equal parts milk and cream are given every hour from 7 a.m. until 7 p.m. After two or three days, soft eggs and well-cooked cereals are gradually added, until at

the end of about ten days the patient is receiving approximately the following nourishment: 3 ounces of milk and cream mixture every hour from 7 a.m. until 7 p.m. In addition, 3 soft eggs, one at a time, and 9 ounces of a cereal, 3 ounces at one feeding, may be given each day. The cereal is measured after it is prepared.

Cream soups of various kinds, vegetable purées and other soft foods, may be substituted now and then, as desired. The total bulk at any one feeding while food is taken every hour should not exceed 6 ounces. Many of the feedings will not equal that quantity. The patient should be weighed. If desired, a sufficient quantity of food may be given to cause a gain of 2 or 3 pounds each week. The acidity is more easily controlled by feeding every hour and giving the alkalies midway between feedings.

Also, in addition to giving an alkaline powder midway between feedings, the powders are continued every half hour after the last feeding until 10 p.m. In all cases of pyloric obstruction from duodenal and pyloric ulcer, it has been found advisable to empty the stomach of all remaining food and secretion at about 10:30 p.m., thus removing the stimulus to an excessive night secretion.

It should be understood that the presence of free hydrochloric acid now and then for a few minutes each day does not seriously interfere with the healing of the ulcer. Such short periods during which corrosion of the ulcer may be possible are as nothing compared with the duration of corrosion to which duodenal and pyloric ulcers are subjected after gastro-enterostomy. In the ordinary surgical treatment of these conditions, such ulcers are subjected to the corrosive action of the gastric juice during the whole period of normal stomach digestion, which occupies many hours each day. The majority of pyloric and duodenal ulcers treated by gastro-enterostomy show few symptoms after the operation, and such ulcers probably heal entirely in the course of time, the same as the majority of the non-obstructive type of gastric ulcers usually heal without treatment. In either case, however, the conditions for healing are far from ideal.

Pyloric obstruction due to spasm of the pylorus, resulting in the retention of food and secretion from one meal to the next during the daytime, and until 3 or 4 o'clock in the morning, and even until the next morning at breakfast time, disappears at once under the influence of such management.

Pyloric obstruction, even of the highest grade, and of long duration, as evidenced by the presence of vigorous peristaltic waves showing through the abdominal wall; history of vomiting food, eaten the day before, for many months; the aspiration of food eaten twelve or more hours before; and the presence of abundant *sarcinæ*, often rapidly disappear, so that at the end of ten days' or two weeks' management, seven hours after the largest and coarsest kind of motor meal is given, the stomach is found empty.

Cases of duodenal ulcer recurrent for years, that have finally developed a high grade pyloric obstruction due to actual anatomic narrowing from indurated, infiltrated, and oedematous tissue have yielded completely to the management.

The explanation of such astonishing results is probably as follows: The active more or less annular ulcer at the pyloric or duodenal outlet is embedded in oedematous tissue infiltrated with round cells and other products of inflammation of varying grades. Under the management advocated, the greatest hindrance to healing having been removed, healing and cicatrization of the ulcer begin more or less rapidly, the round cells and other exudative products disappear, the infiltrated tissue grows thinner in all directions, and when healing of the ulcer takes place, notwithstanding the tendency of scar tissue to contract, the opening through the pylorus or duodenum becomes gradually larger instead of smaller.

In the author's service, surgical procedure in the treatment of peptic ulcer is limited to the following complications and conditions:

1. Perforation.
2. Perigastric abscess.
3. Secondary carcinoma.
4. Hour-glass or other rare deformity of the stomach that is causing serious symptoms.
5. Foci of infection about the roots of teeth, in the tonsils, and elsewhere in the body are sought and removed.
6. Hæmorrhage of a serious nature from peptic ulcer.
7. Pyloric obstruction of a high grade due to actual cicatricial narrowing that fails, under the influence of accurate medical management, to yield sufficiently to allow a motor meal to pass in normal time.

EDWARD L. CORNELL

Frazier, C. H.: The Surgical Treatment of Gastric Ulcer, with Especial Reference to the Choice of Operation. *Penn. M. J.*, 1915, xviii, 617.

Frazier calls attention to the frequency with which cancer of the stomach has been preceded by an ulcer or by a history of gastric ulcer, and quotes the end-results in 120 cases of ulcer treated medically; while 86 per cent left the hospital cured or very much improved, at the end of about two years 30 per cent had died.

Simple gastrojejunostomy has not been satisfactory, but the author believes that by supplementing this with either excision or occlusion of the pylorus or both by partial gastrectomy there will be few cases of relapse.

He reports 16 consecutive cases in which he performed a partial gastrectomy, 13 for chronic ulcer alone, and 3 for both ulcer and carcinoma. There was one death, the case being a poor operative risk. In none of the remaining cases was there a recurrence or any unpleasant consequences.

The author believes transverse resection offers the greatest assurance of cure. D. L. DESPARD.

Pel, P. K.: Familial Cancer of the Stomach (Familien-Magenkrebs). *Berl. klin. Wchnschr.*, 1915, lii, 288.

Pel reports a family of 7 children, 5 of whom died at various ages of cancer of the stomach. There was no history of cancer in the parents or any previous generation of the family. Of the 2 remaining children one suffers occasionally from stomach symptoms.

He mentions another patient who came to him for cancer of the œsophagus; in two generations of this family there had been 10 cases of cancer, not all in the same organ, as in the other family, but most of them in the gastro-intestinal tract. Wegele lost a patient with cancer of the cardia, whose father and two brothers and a sister of the father had died of stomach cancer. Another colleague reported to Pel the case of a family in which the grandmother, mother, and three daughters died of cancer of the breast. Iterson reports two families related by marriage: in two generations of 10 persons, 8 suffered from cancer, 4 of them cancer of the breast.

Haberlin's statistics show that among 138 cases of stomach cancer in Zurich, 10.9 per cent showed cancer in the family history, cancer of the stomach in 8 per cent. A statistical study in Holland of 878 cancer patients showed that there was cancer in the parents or grandparents of 10 per cent, and somewhere among the relatives in 18.1 per cent. Pel however attaches more importance to the study of cancer families such as those reported above than to large collections of statistics. A. Goss.

Bloodgood, J. C.: Stomach Carcinoma. *J. Am. M. Ass.*, 1915, lxiv, 2031.

Bloodgood's observations are based on 184 cases of carcinoma of the stomach. Cancer has been more frequently observed than ulcer, stomach ulcer occurring in 32 cases as compared to stomach carcinoma in 184 cases.

The figures as to the operable and inoperable cases of cancer are: no operation, 45 cases; exploratory laparotomy, 49 cases; gastro-enterostomy, 41 cases; total inoperable cases, 135; resection, operable cases, 49. It follows that in only 26 per cent of the cases has the cancer of the stomach been operable; in 74 per cent, inoperable. The percentage of operable and inoperable cases is shown as follows:

	1890-95	1895-00	1900-05	1905-10	1910-15	Totals
No operation.....	1	3	8	21	12	45
Exploration.....		4	3	22	20	49
Gastro-enterostomy..	2	2	2	21	13	41
Total inoperable....	3	9	13	64	45	134
Resections, operable..		3	6	12	28	49
Totals.....	3	12	19	76	73	183

From 1890 to 1905 there were 35 cases of cancer of the stomach with 25 per cent operable.

From 1905 to 1910 there were 76 cases with 39 per cent operable. These figures demonstrate that cancer of the stomach is being recognized earlier. Up to 1910, among 21 cases of resection there have

been two cures, 10 per cent of the operable cases, or 2 cures out of a total of 111 cases, or 1.7 per cent. From 1910 to date, the percentage of cures has increased from less than 10 to more than 20 per cent. Corresponding with this improvement for the first time the total number of ulcer cases observed has been greater than the total number of cancers, and when the total number of ulcers of the stomach in a surgical clinic exceeds the total number of cancers, the percentage of operable cases of cancer increases, and with this there is an increase in the number of five-year cures. The relation of duration of the disease to operability of the cancer is shown in the table:

	1 to 3 mos.	3 to 6 mos.	6 mos. to 1 yr.	1 to 2 yrs.	2 to 5 yrs.	Over 5 yrs.	Totals
No operation.....	6	6	5	7	6	4	34
Exploration.....	5	10	10	10	10	1	46
Gastro-enterostomy.....	8	7	14	4	5	1	39
Total inoperable.....	10	23	20	21	21	6	119
Resection, operable.....	8	7	8	6	9	2	40
Totals.....	27	30	37	27	30	8	159

Table 2 impresses the author in favor of the conclusion that many cases of cancer of the stomach arise in originally non-malignant lesions.

DURATION OF DISEASE BEFORE OPERATION

Months	Cases	Years	Cases
One.....	2	One-half to one.....	48
Two.....	13	Two.....	28
Three.....	12	Three.....	15
Four.....	8	Four.....	11
Five.....	9	Five.....	5
Six.....	13	Six and more.....	8
Total.....	57	Total.....	115

The author believes that the adult population must be informed that epigastric discomfort aggravated by eating solid food is sufficient warning for a patient to seek thorough examination by a competent physician.

C. G. HEYD.

Haberer, H. von: One Hundred and Eighty-Three Cases of Stomach Resection (Meine Erfahrungen mit 183 Magenresektionen). *Arch. f. klin. Chir.*, 1915, cvii, 533.

Von Haberer devotes 125 pages to the discussion of 183 cases of resection of the stomach performed by himself. He has had 385 stomach operations in all, including the 183 resections, 6 partial resections, 37 cases of unilateral exclusion of the pylorus, and 159 gastro-enterostomies—53 in carcinoma and 106 in ulcer. Of the resections 60 were for carcinoma and 123 for ulcer. He takes issue with Küttner's arguments in his recent article based on 1,100 cases of surgical disease of the stomach. Küttner has reversed his former opinion and now prefers gastro-enterostomy to stomach resection. Von Haberer's conclusions are as follows:

1. In carcinoma the indications for resection are very broad, for permanent results are sometimes obtained even in apparently hopeless cases. The only contra-indications are demonstrable metastases in other organs, multiple peritoneal metastases or carcinoma infiltrating the whole stomach. Large

size of the carcinoma, adhesions, local glandular metastases, even glands in the pancreas, if they are removable, are not a contra-indication to resection.

2. Prognosis must be guarded as to permanent results, for recurrences or metastases may appear even after four years.

3. There is permanent recovery in a small percentage of cases, and even in cases that recur the results are much better than those of gastro-enterostomy, life being lengthened for three years or more.

4. In carcinoma the Billroth II method is the most rational, as it is much more radical than the Billroth I method.

5. In ulcer of every form resection is also the method of choice. Transverse resection and the Billroth II method are the best. The results are much better than with gastro-enterostomy.

6. Resection is especially indicated in ulcers at a distance from the pylorus, for a large percentage of these are affected little or not at all by gastro-enterostomy. All other ulcers should be resected as far as possible, for that is the only way to be sure of removing carcinomata that are mistaken for ulcers.

7. Resection for ulcer can be extended to the upper segment of the duodenum; ulcers deeper in the duodenum are best treated by von Eiselsberg's unilateral exclusion.

8. With Hofmeister and Polya's technique ulcers even of the cardia can be thoroughly removed.

9. The ultimate results of resection for ulcer are very satisfactory and can still be considerably improved if we give greater attention to the relative frequency of multiple ulcers and do not leave them behind at operation.

10. The best way to locate multiple ulcers is by systematic palpation of the stomach, giving careful attention to the condition of the glands along both curvatures.

11. A second ulcer that has been overlooked on operation may easily simulate a true recurrence, so that if care is given to this point the number of so-called recurrences will be greatly decreased.

12. Post-operative peptic ulcer of the jejunum, which can be observed after every form of gastro-enterostomy, seems to occur much more rarely after resection. The author has had 6 cases of peptic ulcer after gastro-enterostomy and none after resection.

13. Peptic ulcer of the jejunum should be radically resected. The results are good, much better than by any other method.

14. Complicating cholelithiasis or appendicitis should be treated by the usual surgical rules at the same time the resection is performed.

15. While resection for carcinoma shows 26 per cent mortality, the operative mortality of resection for ulcer, even with the broadest indications is barely 9 per cent, and this is capable of still further reduction.

A. Goss.

Luckett, W. H.: Visible Acute Dilatation of the Stomach During Laparotomy. *J. Am. M. Ass.*, 1915, lxiv, 2055.

Luckett reports two cases of visible acute dilatation of the stomach during laparotomy. In the first case, just after the removal of the appendix, it was observed that the stomach became markedly distended and presented through the laparotomy opening, extending down until the lower border of the stomach reached the brim of the true pelvis. A stomach-pump was inserted without difficulty and an enormous volume of gas expelled from the distal end of the stomach-pump.

In the second case, while the stomach was being delivered through the wound it suddenly commenced to enlarge. Large gulps of air (?) could be felt and heard. A stomach-pump was inserted with the outer end submerged in a basin of water and a large volume of gas escaped, making itself manifest by bubbling up in the water.

The author emphasizes that both cases showed the escape from the stomach of clear gas and he believes that the black material of true dilatation does not escape until the distention has been maintained for a definite period. He inclines to the view that aërophagy is the essential productive factor.

C. G. HEYD.

Bartlett, W.: An Experimental Study in Exclusion (Functional) of the Pyloric Antrum. *Am. J. M. Sc.*, 1915, cxlix, 625.

The author presents the paper as a study of functional exclusion of the pyloric antrum and not to determine the relative values of pyloric obstruction. The paper, however, is confined mostly to experimental protocols accompanied by brief discussions.

He states that he has excluded the pyloric region 27 times on the human subject, as he reported in 1914. The first 15 were by Doyen's transverse section of the stomach with blind closure, which he thinks has been proved experimentally to be superior in efficiency to any other. Technical difficulties and dangers associated with this method led him to experiment with a view of finding a simpler and safer method that would guarantee the same results. Ten of his twelve patients had the pyloric antrum excluded by original methods which had been satisfactory on dogs.

He gives a lengthy list with brief descriptions of the different methods that have been reported and briefly describes each of the experiments performed by himself.

The animals were autopsied, the œsophagus and stomach with upper jejunum removed, distended with water, and hardened in a 4 per cent formalin solution. Some days later the specimen was emptied and injected with barium, röntgenograms made, and subsequently sectioned for study.

The general principle used was to form a septum across the stomach a short distance from the cardia which would exclude the stomach contents from the

pyloric portion to such an extent that the pyloric opening would not be called upon to transmit the stomach contents. He attempted to form this septum in different ways by mattress sutures over the portion of the stomach clamped while the sutures were applied. Transverse incision was made through the anterior wall and almost through the posterior wall, with subsequent suture of the muscularis and serosa with enclosure by Lembert sutures, followed by a transverse incision with a blind closure of the proximal and distal "submucosa" with burying of the suture line by Lembert's method.

In experiments 6, 7, and 8, he claims priority by three months of an operation described by Porta as having been adopted in Biondi's clinic, and gives reasons for discarding the same. Experiments 9 to 10 were slightly different, but were discarded.

The next 28 cases were based on a clinical experience that a callous ulcer of the lesser curvature of the stomach excised by a V-section with a transverse suture produced an obstruction that was only relieved by gastro-enterostomy done later. In these experiments, septa were made by making transverse incisions embracing one-half or more of the stomach, starting either from the lesser curvature, the greater curvature, or an equal distance from each curvature.

The edges of the incisions were closed by suture, and these in turn were inverted and closed with Lembert sutures which united both edges of the divided portion of stomach, thus forming a septum.

In his experiments the author has tried several different methods and used a specially devised fenestrated clamp. It is presumed that gastro-enterostomy was performed in each case, though it is not so stated.

In recording his methods the author gives the advantages and disadvantages of most of them with his reasons for discarding certain ones. The first ten embraced mostly preliminary work including one control.

Experiments 11 to 21 have to do with partial transverse section of the stomach and subsequent suture of the different layers of the stomach in such a manner as to form a septum which gave complete functional exclusion of the pyloric region.

Experiments from 22 to 36 inclusive embraced a transverse incision and suture that interrupted one-half the lumen of the stomach without involving either curvature. This was accomplished by the special clamp of the author which avoided injury to the vessels at both curvatures.

The incisions in some cases were made with a cautery. In one experiment a skewer was used to isolate a portion of stomach previous to incision and suture. In another the skewer was used in the same manner but the clamp was applied behind the skewer before the suture.

In two experiments an aluminum band, as suggested by Brewer for the pylorus, was used with success on the stomach a short distance from the

pylorus. In the constriction methods there is the objection of leaving a small piece of mucous membrane.

As a result of his work, Bartlett offers the two following methods, which he considers equally efficient:

One where the septum is formed at the site chosen, by incision and suture of a ridge of stomach isolated by clamp or skewer at the site selected, without injury to the vessels of either curvature. This has the objection that it leaves mucous membrane between the layers which are supposed to heal together. He states that he has not the courage to advise the use of this method on the human until there has been further experimental proof by others.

The second method is the incision which includes injury of vessels, as it starts at either the greater or lesser curvature and includes one-half of the stomach's lumen at the site chosen. It is more difficult, takes longer, and encounters more blood-vessels, but it does not include mucous membrane between the folds intended to unite.

His conclusions are as follows:

1. The first ten experiments demonstrated that almost any form of operation which removes a cuff of mucosa plus submucosa, with approximation of denuded muscular coats, results in the formation of a diaphragm. Blind-suture closure of the layers from which a section has been removed seems a necessary safeguard. However, none of these methods is considered simple or safe enough to warrant use on the human subject.

2. His results detailed in the body of this article, as well as those obtained on 10 human subjects, seem to indicate that both of his incomplete exclusion methods, experiments 11 to 34 inclusive, accomplish practically what the more difficult Doyen-von Eiselsberg procedure does, cognizance being taken of the fact that the author has no animal observation more remote than two hundred and ten days. One advantage which cannot be denied these forms of exclusion is that no prolapse of the major portion of the stomach is possible with subsequent functional disturbance, since the organ is not completely divided nor the two halves detached from each other.

3. The pyloric antrum was found to undergo a surprising diminution in size after partial exclusion no matter what technique was used. This would seem to be due to tonic muscle contraction, since comparison with control specimens from the pyloric antrum of a normal stomach shows the excluded muscularis to be greatly thickened. Histological study of many sections from the areas effected in 18 experiments demonstrates no other abnormality.

4. He goes no farther than to suggest that the obstruction may have been of functional nature in stomachs which were cut only half way across, found at autopsy to possess an incomplete septum, and showed tonic contraction of the excluded area.

DONALD GORDON.

Mayo, W. J.: *Chronic Duodenal Ulcer*. *J. Am. M. Ass.*, 1915, lxiv, 2036.

The post-mortem statistics of chronic duodenal ulcer have been very misleading. The work of Rokitsansky, Brinton, and Welch represented splendid research in their day, but that was 30 to 75 years ago. Even acute perforations were not always recognized post-mortem because of the accompanying generalized peritoneal infection. The clinical diagnosis of duodenal ulcer was even more chaotic until within a recent period. Ten years ago the statistics of three large hospitals showed almost no duodenal ulcers and varied in the clinical frequency of gastric ulcer with the same clientele from 0.13 to 0.48 per cent, both falling short of the post-mortem findings three to eleven times.

In Germany the change of opinion as to the frequency of duodenal ulcer has been very remarkable during the last two years, recent German surgical literature showing a percentage as high as in this country. These cases were not diagnosed in the past or they were called gastric ulcer, nervous dyspepsia, or hypochlorhydria. The modern view is the result of operating-room findings. A large majority of ulcers in the vicinity of the pylorus which have been called pyloric ulcers are in reality duodenal. Gastric ulcers in the terminal inch and a half of the pylorus will probably be mistaken for carcinoma on account of the tumefaction due to oedema and muscular hypertrophy. Statistics of the Mayo Clinic show 73 per cent duodenal ulcers to 27 per cent gastric ulcers.

In typical duodenal ulcer the history is the most important diagnostic feature, the roentgenogram second, the physical diagnosis including the use of the stomach tube third, and the laboratory diagnosis a poor fourth. Many duodenal ulcers give atypical histories because of coincident disease of the gall-bladder or appendix, so that a differential diagnosis at the operating table must be made in each case. Unless the duodenal ulcer can actually be demonstrated at the operating table, the operation should not be done. Symptomatic evidence cannot be accepted to the contrary.

The large majority of ulcers involve the first two inches of the duodenum and 83 per cent occur in men. Gastro-enterostomy is the operation of choice. Excision combined with the Finney gastroduodenostomy is occasionally valuable to meet certain indications. Blockage of the pylorus is unnecessary unless there are symptoms of impending perforation or hæmorrhage. The majority of so-called recurrences of duodenal ulcers after operation, are due to improper technique, especially to the use of continuous non-absorbable sutures of silk or linen, which may cause a gastrojejunal ulcer, thickening of the stroma, and adhesions, and which require many months before the thread is cast off. These patients usually obtain relief for some months following operation; the symptoms then recur and are supposed to be due to dietetic errors. In cutting off more than 100 gastro-enterostomies which had been

made for symptomatic ulcer at the Mayo Clinic, no evidence was found of gastric or duodenal ulcer or that there had ever been one. Blocking the pylorus will not help to cure these patients who have been unnecessarily operated on. The scar left from the blocking introduces cicatricial changes which bear false testimony of the existence of an ulcer when reoperation is undertaken.

Petren, G.: Retroperitoneal Perforation of Duodenal Ulcer. *Ann. Surg., Phila.*, 1915, lxi, 414.

Petren calls attention to the rare recognition of perforation of ulcer of the posterior wall of the vertical and inferior horizontal portion of the duodenum and to the fact that the subject has been "scantily" dealt with in surgical literature.

He describes a case of his which he diagnosed as having this condition, which neither operation nor autopsy proved. He takes the opportunity to bring the attention of the profession to this condition by a discussion of the various possibilities suggested by the case operated upon with references to the brief literature.

The patient, a male 63 years of age, since he was 18 or 20 years of age, had had "pains in the belly" in the form of periodically recurring stomach trouble. He was occasionally free from symptoms for a couple of months, but afterward he had eructations and heart-burn. He had discomfort in the pit of his stomach after eating fat food or drinking coffee; occasionally he vomited. Usually the pain did not occur until two or three hours after a meal; vomiting not until two or three hours after. He lived on a strict diet. At the age of 45 he had an attack of vomiting blood, lasting four or five days, followed by tarry stools, and was in bed for four weeks at one time. He did not take alcohol until the age of 45, but increased the consumption from that time until he periodically drank to excess. For six months the pain had been worse, with frequent vomiting, and occasionally he was confined to bed. Three weeks before operation he became much worse, with great pain in the right side of the abdomen until he could scarcely stand. He stayed in bed, and had fever of 100° to 102°; he had no appetite; had occasional vomiting, constipation, and chilly sensations. The urine contained albumin, but there were no urinary symptoms. The attending physician could discover no signs of peritonitis, appendicitis, or peritoneal irritation, except a painful resistance at the site of the right kidney which increased downward and became more and more distinct. On entering the hospital he was fairly fleshy; was weak; had a temperature of 102°; pulse 110 to 120. There was a small amount of albumin in the urine with few leucocytes, no appetite, occasional vomiting, constipation, passed small amount of gas.

The abdomen was not dilated; its left upper quadrant was soft and callous; toward the right side a deep resistance could be palpated, indistinctly limited upward and laterally, but distinct medianly

and downward; it was the size of two fists and tender to deep palpation. The mass extended from the lower half of the right kidney to the right iliac fossa, with its lower pole about two fingerbreadths below the anterior superior iliac spine.

An operation was performed under local anesthesia. An incision was made downward and inward from above the anterior superior spine of the ilium. On going through the muscular wall, an abscess cavity was entered containing thick pus, which was evidently retroperitoneal. The course was regular, with a temperature of 100.5° for four days; there was a copious discharge of pus the first week or two, finally followed by healing. The general condition of the patient improved slowly the first three weeks. He had no appetite and vomited occasionally. He then improved more rapidly, and at the end of six months had gained 10 kilograms. At the end of a year he had gained, but still had vomiting, heart-burn, and stomach trouble.

In the discussion of the case, Petren concludes that the onset of acute gastric symptoms points to an active ulcer. He excludes appendiceal abscess on the ground that the patient did not have appendiceal symptoms. The first tentative diagnosis was that of paranephritic abscess starting at the right kidney, but there were no urinary symptoms, except albumin. There was nothing to show that the abscess came from the pancreas, liver, or bile-ducts, although such cases recently have been described by Sprengel and others. He concludes, therefore, that the symptoms of duodenal ulcer together with the course, compared with a case previously published by him and the present report, must lead to the probable diagnosis of a retroperitoneal perforation of a duodenal ulcer with abscess.

He states that he has found only 5 cases reported in the literature, none of which recovered. He suggests that in the experience of every surgeon there are right-sided retroperitoneal abscesses of obscure origin which he believes have their source in a perforated duodenal ulcer. From the recoveries that have taken place after operation he concludes that the condition is probably not as fatal as the 5 reported cases would suggest.

The ulcers which on perforation give rise to retroperitoneal suppuration are most frequently situated on the horizontal part of the duodenum, as in a case observed by Warfvinge and Wallis, where a subacute perforation led to a small collection of pus retroperitoneally, which broke into the superior mesenteric vein with consequent thrombus in the vena portæ and suppurative hepatitis.

The pus from abscesses so formed may collect on the right side in the kidney region and pass down behind the ascending colon to the right iliac fossa, as in the two cases cited. In one case the pus traveled farther down and pointed to the inner side and above Poupart's ligament, bursting through the skin and forming a permanent fistula through which bile-colored fluid and remnants of food passed. In another case, a duodenal fistula arose

after incision of the abscess. Another case developed a diffuse phlegmon which extended to the left side and down into the pelvis. In one case the infection spread, as cited, from the retroperitoneal space along the great vessels into the mediastinum.

The symptoms of retroperitoneal rupture are sometimes violent, but not so much so as intra-peritoneal rupture. There are rapidly recurring pains in the upper or right abdomen, vomiting, and a general disturbance of the usual condition.

In other cases, the symptoms are less marked, and retroperitoneal inflammation may develop quite slowly with fever, chills, increased pulse, and loss of appetite.

The appearance of tenderness with resistance near the right kidney or in the right iliac fossa aids in clearing up the diagnosis.

Early treatment, consisting in incisions of the retroperitoneal phlegmon or abscess, is desired. In many cases with small perforations and limited suppuration, incisions and drainage would probably be enough. If fistula should arise it would be best to wait and hope for spontaneous healing. If the fistula does not close and the nutrition of the patient begins to suffer he suggests Berg's method of gastro-enterostomy with pyloric exclusion. He feels that mobilization of the duodenum with suture of the perforation as suggested by Telford and Radley would rarely be necessary.

DONALD S. GORDON.

Keith, A., Lane, W. A., Mutch, N., and Others:
Contributions to the Problem of Intestinal Stasis. *Brit. J. Surg.*, 1915, ii, 574.

The symposium in question attempts to solve some of the many problems confronting the profession on the question of intestinal stasis.

KEITH attempts to discover an anatomical basis for this condition. Several years ago he was able to demonstrate a small node of tissue at the root of the superior vena cava, which apparently is the seat of auricular contractions. This tissue is midway between the nerve and muscle tissue, and cannot be definitely separated from either. Following a similar trend of thought, he attempts to explain the contractions of the large intestine as beginning in a separate kind of tissue. In looking about for such tissue, he found in the region of the ileocaecal valve of the rat a small node of tissue, which in its histological appearance is midway between the sympathetic nerve-fibers of the intestine and non-striated muscle. This tissue he has termed Auerbach's tissue. He reasoned that if this tissue were really excitatory in nature it would follow that there would be similar tissues at other regions of marked muscular action; e.g., the pylorus and the descending colon. By examining these localities it was found that the tissue here was abundant. By further examination of 6 specimens from cases of intestinal stasis, it was found that in many of them this tissue was present to an abnormal degree. Therefore the author is led to the belief that intestinal stasis is

due, not, as is usually supposed, to a mechanical obstruction, but to a hypertonus of tissues which are ordinarily in a state of tonic contraction.

As a further support of his position that intestinal stasis is not due to a mechanical obstacle, Keith refers to the specimens which he examined after removal. In no instance was the lumen of the bowel encroached upon to such an extent as to cause obstruction. Such kinking or acute flexures as were present could not have prevented the easy forward passage of the intestinal contents, provided that the musculature of the bowel was acting normally. This evidence would lead to the conclusion that the difficulty was an inherent disorder in the action of the colic musculature.

He further takes issue with Lane regarding the normal and healthy colon as a mere sewage system. Keith believes that the colon is largely glandular, its function being unknown. Because the body can continue in an apparently healthy state following its removal does not mean that it is of no use in the economy.

He described large cells in the reticular tissue of the large intestine. These cells which measure from 15 to 25 microns in diameter and are heavily laden with brown granules may be related to the symptoms which attend intestinal stasis.

MUTCH reaches the following conclusions:

1. Dilatation of the duodenum is usually associated with gastric stasis.
2. Dilatation of the duodenum varies directly as the degree of ileal stasis, and — apart from this — shows no relationship to the ileal kink.
3. Epigastric tenderness in constipated subjects is usually experienced over the third part of the duodenum, not over the pylorus.
4. Typical "hunger-pain" may arise when food in the lower ileum produces duodenojejunal obstruction.
5. A pure culture of a long-chained, gram-positive, hæmolyisin-producing streptococcus was obtained from the duodenum of a man with severe anæmia and pigmentation.
6. The richness of the living bacterial flora of the colon is immeasurably greater than that of the last coil of the ileum.
7. The degree of ileal infection with coliform organisms is proportional to the degree of ileal stasis.
8. A marked ileal kink acts as a protective barrier against invasion of the ileum by coliform organisms.
9. The infection of the ileum with coliform organisms and the dilatation of the duodenum vary in a parallel manner.
10. The infection of the ileum with coliform organisms is uninfluenced by the acidity of the gastric secretion.
11. Urine of constipated patients often contains urobilin.
12. Urine from constipated patients often contains hydroxyphenylacetic acid.

13. The excretion of the more complex tyrosin decomposition-products varies directly as the degree of ileal infection with coliform organisms.

14. The excretion of tryptophane decomposition-products varies directly as the degree of ileal infection with coliform organisms.

15. The excretion of indoxyl, indolacetic acid, and hydroxyphenylacetic acid is uninfluenced by an infection of the ileum with streptococci or with the bacillus acidophilus of Moro. The excretion of the last-mentioned substances varies in proportion to the degree of ileal stasis.

17. The excretion of tyrosin derivatives is uninfluenced by hyperchlorhydria, but increased by hypochlorhydria.

18. The excretion of tryptophane derivatives shows the same relationship to gastric secretion as does that of the tyrosin derivatives.

19. The excretion of indoxyl, indolacetic acid, and urobilin is almost entirely abolished by ileocolostomy.

20. An infection of the ileum with bacillus aminophilus occurs in constipated patients with a subnormal blood-pressure, but not in other constipated patients.

21. Chronic infection of the ileum with staphylococcus citreus has been shown to be present with chronic septicæmia due to the same organism, and with chronic joint, lymphatic, and splenic changes classified as Still's disease. The constitutional changes and those in the joints, lymphatic glands, and spleen were abolished by colectomy. Fifty-five ileums of patients without Still's disease were free from staphylococcus citreus.

22. The hands of constipated patients recover from exposure to cold at a very much slower rate than do the hands of healthy subjects.

23. A patient with Raynaud's disease was found to be the subject of chronic intestinal stasis. In his ileum were large numbers of an unusual gram-positive bacillus and a short streptococcus. Colectomy restored his hands to a normal condition, in which they showed normal reaction after exposure to cold. His ileal flora formed pressor bases from peptone.

BARCLAY reaches the following conclusions:

1. The large intestine is only one part of a closely linked system.

2. Very wide variations, both as regards anatomy and physiology, are compatible with perfect health.

3. The ileocæcal region is in very close association with the duodenopyloric region. There is evidence of two separate reflexes between the ileocæcal valve and the pylorus; i.e., one from the stomach to the ileocæcal valve, and another from the ileocæcal valve to the stomach—the latter (the ileopyloric reflex) being responsible for appendicular dyspepsia.

4. Ileal stasis is, up to a point, physiological. Pathological ileal stasis, usually associated with adhesions in this region, is most frequently appendicular in origin.

5. In all these examinations it is essential to prepare and examine the patients on a routine plan. A scheme that includes "double" feeding is useful.

6. The appendix can be seen in a certain proportion of cases, and by palpation it can be determined whether it is fixed or lying free.

7. The normal movement of fæces through the large intestine is by "mass" movement, in which a large column is moved through a large section of the colon in a few seconds; these movements take place probably some three or four times a day. The "mass" movements do not occur in the cæcum.

8. Constipation occurs as the result of stagnation: (1) in the sigmoid and rectum, inefficient defecation, or dyschesia; and (2) in the cæcum, constipation proper.

9. Constipation proper is probably the result of a defect in the mechanism of the "mass" movement. It is suggested that for the efficiency of this movement it is necessary that a sphincteric contraction should be present. The competency or otherwise of this sphincter, or point *d'appui*, determines whether the "mass" movement, when it occurs, propels all the fæces forward, or sends some of them back into the cæcum. The large sloppy cæcum is the result of this insufficiency, and not the cause of constipation.

10. The opaque meal seldom gives information as to early neoplasms of the large intestine; it is only after the bowel becomes distended that information is obtained in this way. All suspected cases of neoplasm of the large bowel should be investigated by means of the opaque enema.

LANE contributes an article on the operative technique of ileocolostomy and colectomy. In brief the technique for ileocolostomy is the division of the ileum several inches from the ileocæcal valve, with the inversion of the distal portion and closure by purse-string suture. The proximo portion is then inserted into the pelvic colon at its upper part, the mucous and other coats being sewn together by a close buttonhole suture. Around this another row of sutures perforating the peritoneal and muscular coats is employed. The intestines are drawn up out of the pelvis, and the adjacent surface of the pelvic colon is sewed carefully to the divided margin of the mesentery of the ileum.

The operation of colectomy is preferred by Lane in cases where stagnation in the colon following an ordinary ileocolostomy is likely to occur. The mesentery supplying the portion of the bowel to be removed is carefully doubly ligated, the division being made between ligatures. The ileum is then divided as in ileocolostomy, and the pelvic colon drawn up out of the pelvis and divided. The end of the ileum is attached directly to the cut end of the pelvic colon; the innermost row of sutures perforates all the coats of the bowel and is of the buttonhole type, while the outer rows secure the peritoneal and muscular coats in their grip and do not perforate the bowel. Some difficulty may occasionally be met because of the difference in caliber of the two por-

tions of the bowel, but this can be readily met by arranging the sutures so that each picks up a correspondingly greater portion of the circumference of the pelvic colon than of the ileum. After this anastomosis has been rendered complete, the cut edges of the mesentery of the ileum and of the pelvic colon are sutured together, care being taken to leave no raw surface either on the upper or lower aspect of the junction. Lane prefers the end-to-end anastomosis rather than the lateral or end-to-side anastomosis.

J. H. SKILES.

Watson, C.: Diagnosis and Treatment of Ileal Stasis. *Clin. J.*, 1915, xlv, 209.

The existence of pathological ileal stasis can be established only by an X-ray examination carried out from five to six hours after the ingestion of the meal. It is important to remember that an examination should be made in both the erect and the recumbent postures.

Another point to be noted is the relative sterility of the contents of the ileum under normal conditions, contrasting with the abundant bacterial flora on the distal side of the ileocaecal sphincter. The author thinks it probable that a degree of incompetence of this sphincter, allowing a regurgitation of bacteria into the small bowel, is an important factor in inducing disease in this region and subsequent general manifestations of ill health. He has lately had the opportunity of making observations on the state of the stools in two patients after a complete and very successful colectomy. In both instances he found that the stools passed by the patients were alike in their consistency, odor, and bacterial contents, and did not differ materially from the stools from an unhealthy large bowel. It was clear that in both cases the condition of the lower part of the small intestine was identical with that seen in aggravated cases of excessive putrefaction in the large bowel. In other words, in advanced degrees of intestinal toxæmia, the lower part of the ileum may play the part of a cesspool analogous to that which frequently occurs in the large bowel.

A careful examination of the urine should be made, including in many instances a bacteriological examination. The more important urinary abnormalities met with include: (1) the presence in excess of cellular elements, especially epithelial cells and pus cells; (2) an increased toxicity of the urine revealed by the abnormal multiplication of bacteria after voiding, and in many instances a true bacteriuria, chiefly organisms of the bacillus coli and coccal groups; (3) the presence of oxalate of calcium crystals; and (4) excess of indican.

In the earlier stages of the disease, ileal stasis, and the associated stasis commonly met with in the cæcum and colon, is essentially a medical ailment and can be corrected by appropriate treatment. In chronic cases accompanied by pathological adhesions involving the cæcum and appendix, the condition can be dealt with satisfactorily only by surgical measures. It is sometimes a matter of considerable

difficulty to determine in any given case whether it can be dealt with successfully medically or can be relieved by surgical measures only. The important points in this connection are: (1) the history with regard to chronicity and the amount of disability entailed; (2) the result of medical treatment, if that has been thoroughly applied; (3) the information supplied by the X-rays.

The medical measures employed may be briefly summed up as follows:

1. Removal of any contributory cause of sepsis, such as is frequently present in the shape of a neglected pyorrhœa.

2. Massage and remedial exercises, which are by far the most important remedial measures in the treatment of the disease.

3. Intestinal lavage. In cases where a careful examination of the stools reveals pronounced excessive putrefaction, it is often advisable at the outset to treat the lower bowel by giving an enema of soap and water daily, followed immediately by irrigation of from two to three pints of clear water.

4. Diet. The dietetic treatment should be carried out on general lines.

5. Medicinal. This consists essentially of mild catharsis, using petrolatum principally.

The various operative measures that are indicated include the following, which it will be seen apply not only to ileal stasis, but to the associated conditions of the cæcum and colon which frequently coexist:

1. The removal of adhesions involving the ileum or cæcum.

2. A narrowing and mobilizing of the cæcum.

3. The removal of the appendix.

4. A combination of the foregoing.

5. A short-circuiting operation — ileosigmoidostomy or colectomy — partial or complete.

After operation it is often advisable to give a course of massage and remedial exercises in order to improve the atonic condition of the intestinal and abdominal musculature.

EDWARD L. CORNELL.

Proust, R., and Paris, J.: A Case of Appendicitis with the Pain on the Left Side (Sur un cas d'appendicite avec point de coté gauche). *Rev. de gynéc. et de chir. abd.*, 1914, xxiii, 187.

Proust and Paris describe a case of appendicitis in a girl of eight. On admission she was in excellent condition, but the next day her pulse became rapid and weak and her facial expression bad. Examination showed rigidity of the muscles, and pain at a point on the left side symmetrical with McBurney's point. Both of these signs had been lacking the day before. She had no pain on the right side. Laparotomy was performed and an abscess found on the left side, which had ruptured into the peritoneal cavity. The patient recovered.

The authors point out that pain in this location is symptomatic of rupture of a pelvic abscess. The anatomical arrangement of the pelvic colon makes it natural for the pus to rise along its left border and

break into the peritoneal cavity on that side. Their knowledge of this fact made it possible for them to make a diagnosis and operate in time to save the patient's life. References are given to a number of works in which this question of left-sided pain in appendicitis are discussed. In some of the cases the appendix was on the left side; in others it was due to rupture of an abscess, as in this case. A. Goss.

Hugel, K.: Treatment of Colon Infection (Zur Behandlung der Coliinfektion). *Beitr. z. klin. Chir.*, 1915, xcv, 633.

Oxygen has previously been used in such surgical conditions as malignant oedema and gas phlegmon. Thiriar asserts that it is not an antiseptic, but that it merely offers a barrier to the advance of anaërobic bacteria. Hugel, however, has used it in all kinds of severe progressive colon infection with excellent results. A rubber tube is passed from an oxygen tank into the infected region, and oxygen passed through it for one, two, or three minutes. Histories of 2 cases of pleural empyema successfully treated in this way are given. The chief field of colon infection, however, is peritonitis caused by appendicitis. In 1913, 12 cases of perforative appendicitis and severe peritoneal infection were treated by means of oxygen insufflation. Two of the patients died but the other 10, in whom the disease was just as severe, recovered. For the sake of comparison he treated two children with about equally severe cases of peritonitis following appendicitis, one with oxygen insufflation and one without. The one treated with oxygen recovered and the other died. This year 7 cases have been treated with oxygen and all recovered.

The reason for the curative effect of oxygen has not been experimentally explained. Oxygen passed through a bouillon culture of colon bacilli does not harm them; but it seems that the oxygen stimulates leucocytosis and the leucocytes take up the bacteria.

Marvel in 1914 confirmed the good results of oxygen treatment in puerperal infection with gas-forming bacilli. A. Goss.

Lynch, J. M., and Draper, J. W.: Developmental Reconstruction of the Colon. *N. Y. M. J.*, 1915, ci, 1198.

The morphology and function of the colon depend upon both heredity and environment. The chemistry of alimentation in man is controlled largely by enzymes and the nervous system. The authors consider stasis as a diffuse toxæmia from the alimentary canal, the result of aberrant biochemistry, usually bearing a measurable ratio to the delay in the onward passage of the intestinal contents as visualized by the X-ray.

The cæcum and sigmoid, due to their embryological development, are two of the most variable organs in the body and when ill-developed are the frequent cause of disorders elsewhere. Physiologically the duodenum is the most important portion of the alimentary tract and until its functions are

more thoroughly understood the treatment of stasis will probably be inadequate.

Stasis is hereditary or acquired. The treatment may be medical or surgical, some cases yield to hygienic treatment, others need surgical treatment.

Cases of transient obstruction either of mechanical or physiological origin may be classed as borderline cases. Fixed obstruction is always surgical.

The methods of surgical therapy available are: ileosigmoidostomy, cæcosigmoidostomy, transplanted cæcosigmoidostomy, appendicostomy, cæcostomy, ileostomy, plication, colosigmoidostomy, autolytic excision, complete colectomy, and developmental colonic reconstruction.

Ileosigmoidostomy causes a partial occlusion and exclusion of the colon without providing adequate drainage, which may lead to cæcal dilatation, requiring a secondary operation of colectomy in 5 to 10 per cent of cases.

Cæcosigmoidostomy is at variance with physiology and useless in most cases.

Appendicostomy gives excellent results in some cases. Cæcostomy answers the same purpose as appendicostomy and is used chiefly when the appendix is not available. The indications for ileostomy are limited, and plication is ineffectual. Colosigmoidostomy may be indicated in rare cases of obstruction at the splenic angle or at the descending colon. Autolytic excision and complete colectomy have very limited fields of usefulness, the latter chiefly in cases of megacolon.

By developmental reconstruction is meant the replacement of the ileocolonic junction to its embryonic or second position. It removes the infected organ, restores the continuity of the bowel, and has a much lower mortality than total colectomy. The authors have performed the operation 16 times but have had some poor post-operative results. They believe that cases with colons with thick walls give better results than those with thin walls.

Of the cæcums and colons removed and examined sufficient pathology was discovered to lend force to the theory that they cause a general toxæmia: some colons showing a polyposis, others a destruction of Auerbach's plexus; and in the secretion of one a streptococcus viridans was found. D. H. Boyd.

Schneiderhöhn, O.: Treatment of Hirschsprung's Disease (Die Therapie bei der Hirschsprung'schen Krankheit). *Ztschr. f. Kinderh.*, 1915, xii, 321.

The author describes 4 cases of his own, in 2 of which medical treatment was given and 2 were operated on. He has collected 358 cases from the literature and gives a bibliography of 260 titles. The statistics show that the mortality is lower and the number of recoveries greater in the cases treated surgically than in those treated medically. The mortality for the whole 358 cases was 43 per cent and the number of recoveries 30.7 per cent with an additional 7 per cent of marked improvements. For the 143 cases treated surgically the mortality was only 36 per cent, with 46 per cent recoveries.

Surgical treatment must not be applied in all cases. Very early cases may be treated with good results medically, and in young children the results of medical treatment are better than in older individuals, while surgery is more dangerous. The most radical surgical treatment, and the most effective in cases where it is indicated, is resection of the diseased part of the intestine. Other operations sometimes indicated are entero-anastomosis, plication of the colon, formation of an artificial anus, and a longitudinal incision sutured up again transversely. Tables are given showing the results with the different methods of operation. The author thinks the prognosis may be improved by careful selection of cases and adequate surgical treatment.

A. Goss.

Crouse, H.: A New Position for Proctoscopic Examinations. *Surg., Gynec. & Obst.*, 1915, xx, 723.

The author describes a position which he has used for several years in making proctoscopic and sigmoidoscopic examinations in either sex, as well as in treating the trigone of the bladder and inspecting the meatus of the ureters in the female. The patient is placed face downward on an ordinary examining or operating table, the left of the latter being dropped; two stools or chairs padded with pillows are placed so as to permit the head of the patient to pass easily between them. When the ordinary electric-lighted male urethroscope, proctoscope, or sigmoidoscope has passed the sphincters of the bladder or rectum, the obturators are removed, when a suction of air occurs, ballooning the emptied bladder or bowel. Passing the valves of Houston and the upper sigmoid into the true descending colon with the sigmoidoscope can be accomplished under direct observation.

The knee-chest posture is difficult for the patient to maintain, while in the author's position the patient's thighs are used to steady the operator's elbows, and also a handy space is afforded for the location of instruments. Operations upon the lower rectum, such as bowel-slipping procedures secondary to removal of rectovesical and recto-urethral fistulæ, have been performed by the author with the patient in this position, the anæsthetic being given as in the Cushing position for cerebral decompression work upon the skull. Laxatives and cleansing enemas and an empty stomach are insisted upon before examination.

Zobel, A. J.: The Early Diagnosis of Cancer of the Rectum. *Proctologist*, 1915, ix, 69.

Cancer of the rectum is not often observed in its earliest stages, as at that period it seldom manifests any sign of its presence. After significant symptoms make their appearance it is possible to discover it early through a rectal examination. Unfortunately too many await the classic symptoms before they make a rectal examination. In no part of the body is a malignant growth more insidious in its approach than in the rectum, but sooner or

later some one symptom becomes more aggravated and then relief is sought. At this time a rectal examination is imperative, although too often it is neglected because the patient objects to the procedure or the examiner is reluctant.

Cancer of the rectum is not confined to persons in middle life or older; 10.8 per cent of one series occurred before the fortieth year and 2 to 3 per cent during the third decade. From 13 to 16 per cent of all cancers of the digestive tract involve the rectum.

Rectal pain or tenesmus; diarrhœa or constipation; blood, mucus, or pus in the bowel movements may arise from cancer or from a benign lesion. As a rule rectal pain is more often caused by a comparatively trifling lesion, such as a fissure or inflamed hæmorrhoid, than by a malignant growth. There may be only an indefinite uneasiness or pruritus which demands relief. If located in the ampulla the disease may go on to complete obstruction of the bowel and still cause little or no pain. It is only later on when the disease has progressed almost to its limit that the pain becomes more constant and severe. These cases are so well developed that they are practically inoperable. Pain is generally felt early when the anal margin is involved and is often accompanied by a bearing-down sensation in the rectum.

A continuous dull pain in the lumbar or sacral regions, a sensation of weight in the perineum, pains shooting down the legs, and abdominal pains are often the first symptoms of rectal cancer and should lead to an early diagnosis.

Hæmorrhage is not always a constant feature; it may occur late or not at all, but in the absence of benign lesions a bloody discharge even when unaccompanied by other symptoms, may be one of the earliest signs of trouble. Cancer may exist above bleeding internal hæmorrhoids.

Among symptoms of early carcinoma which should stimulate investigation are constipation or diarrhœa. If the growth is in the upper third of the rectum it is usually circular and soon leads to an obstructive constipation. In an adult, increasing or extreme constipation which persists for weeks despite treatment calls for a rectosigmoidal examination.

Following closely upon the constipation there is often a diarrhœa which is most persistent. A proctoscopic examination should be made in every case where there is a sudden onset of mucous colitis, with pain and tenesmus, in an elderly person who has previously had normal bowel movements, or in every case of diarrhœa which has resisted treatment longer than a week. After a growth breaks down, the movements increase in frequency and amount, being composed chiefly of blood and mucus and are usually indicative of ulceration of a growth in the ampulla. It may be thought to be amœbic colitis, and when the amœbiasis is further complicated by multiple adenomata of the rectum the condition is apt to be considered malignant.

Loss of weight usually becomes prominent during the ulcerative period of the disease only. As a rule it is only when the hæmorrhages have been very profuse and when there is considerable supuration that the emaciation is marked.

Ribbon-shaped stools are of little value as they are due to proctospasm and arise from internal hæmorrhoids or from fissure. A history of urgent calls to stool immediately on arising; of stool irregularity associated with indigestion; or of flatulence in a normal individual demands a rectal examination, as it is only at this time that operative measures are life-saving.

In the early stage a neoplasm feels like a thickening of the submucous tissue. This infiltrated area is sessile, usually round or elliptical and readily movable on the underlying muscular layer. Later it becomes adherent and is felt as an annular stricture or a cauliflower growth, projecting into the lumen of the bowel. The overlying membrane is at first not affected, but soon it ulcerates superficially and gradually becomes deeper, so that it finally gives the sensation of an excavation with indurated base and margins. Rarely the growth may be soft. The digital examination should always precede the proctoscopic.

Rectal malignancy must be differentiated from acute inflammatory conditions producing perirectal infiltration; from extrarectal lesions in either sex, which by impinging upon the bowel may cause obstructive symptoms, but which lack the bloody, mucous, or purulent discharge; from "sphincteric proctitis;" from polypus or a villous papilloma; and lastly, from a well-marked benign stricture of the rectum. The latter has a clear cut, firm margin, does not bleed easily, and is usually freely movable.

In concluding the author advocates a digital and proctoscopic examination in every individual giving a history of a discharge of blood, mucus, or purulent material from the rectum; persistent diarrhoea; unusual constipation following previously regular bowel movements; pain, tenesmus, bearing down or other abnormal sensations in these parts; unaccounted for loss of weight; obscure digestive disturbances, especially when accompanied by stool irregularities; or of any symptom which could be caused reflexly by a cancerous growth.

E. K. ARMSTRONG.

Svindt, I.: A Case of Prolapse of the Rectum Treated by Transplantation of Fascia (Et Tilfælde af Prolapsus recti helbredt ved fri Fascie-transplantation). *Hosp.-Tid.*, Kjøbenh., 1915, lviii, 533.

Svindt describes a case of prolapse of the rectum that he treated by running a strip of fascia around above the anus and drawing it up to reduce the opening to the normal size. Thiersch used wire in the same way, but Svindt thinks fascia is much better. The case he describes was in a child 15 months old that had had prolapse of the rectum since the age of four months. The prolapse was

reduced and four incisions made through the skin and subcutaneous tissue around the anus, about 1 cm. from the mucosa. The two lateral incisions were found to be unnecessary, however. A strip of fascia about 8 cm. long and 0.75 cm. wide was cut from the outside of the thigh. This was carried around the anus with a stout curved needle, introduced at the back incision and brought out at the front one. Then the ends of the strip were drawn up tight enough so that only the little finger could be introduced into the anus. The ends were sutured together with silk and buried. The inside of the fascia was turned inward. The wound healed by first intention and there has never been any tendency to prolapse since. The method can be used in adults also.

A. Goss.

Philippowicz, J.: Ligature Treatment of Hæmorrhoids (Zur Ligaturbehandlung der Hämorrhoiden). *Beitr. z. klin. Chir.*, 1915, xcvi, 528.

Philippowicz recommends the ligature treatment of hæmorrhoids as being the simplest, and also the least difficult and dangerous for the patient. In Whitehead's operation there is danger of gangrene of the edges of the wounds or healing by second intention, even with the most careful technique. In the past five years he has operated for hæmorrhoids in 65 cases, by ligature in 62.

His technique is as follows: After the usual preparation of the intestine with castor oil and opium, general or local anæsthesia is given and the sphincter carefully stretched. When general anæsthesia was used there were no after-pains worth mentioning. If the sphincter is too much stretched there may be permanent imperfect continence. The hæmorrhoids are seized with forceps and drawn downward and outward. An incision is made in the sulcus at the base on each side, a strong ligature inserted in the groove made and drawn as tightly as possible. The greatest care should be taken not to include skin or too much mucous membrane. A tube is inserted to occlude the rectum. The ligatures are left 5 cm. long and are generally discharged after five to seven days with the hæmorrhoids. After the operation the patient is given opium for four days. After the discharge of the hæmorrhoids the treatment consists in daily sitz baths and the application of boric acid salve. The tube is removed after four days, or even sooner if it is not well borne.

In the discussion, HUFSCMID said he had used the ligature treatment in 10 cases, but the pain after operation was so great that he discontinued its use and now uses the Mikulicz operation.

KÜTTNER said there was pain after ligation only when skin was included in the ligature. He prefers the method on account of the rapidity with which it can be performed and the fact that strictures are not formed.

PEISER also advocated ligature treatment.

BAZDORFF did not agree with the objections made to the Whitehead operation. He has used it in

several hundred cases with good results, having never had stricture, incontinence, or recurrence. Therefore he prefers it, even though it is the more radical method.

A. Goss.

LIVER, PANCREAS, AND SPLEEN

Yeomans, F. C.: Primary Carcinoma of the Liver: Operation for Recurrence Over Seven Years After Primary Operation. *J. Am. M. Ass.*, 1915, lxiv, 1301.

Yeomans briefly reviews his former report of a patient well two years. The history was quite negative. Physical examination showed at that time a tumor in the right hypogastrium, oval and firm, extending from the right costal margin downward to an inch below the navel and slightly beyond the mid-line. It moved with respiration and percussed flat with the zone of tympany just below the costal arch. The tentative diagnosis was tumor of the kidney or liver. Operation revealed a tumor of the liver, covered by a network of congested veins. The mass imparted a cystic feel and by its position precluded palpation of the bile-ducts. The fundus of the gall-bladder was normal.

The tumor mass was incised and found to be a cyst about the size of a grapefruit, full of trabeculae and degenerated tissue, which was removed by means of a curette; rubber drainage tubes were put into the cavity and the cavity packed lightly with gauze. The wound healed in four weeks.

The pathological diagnosis was that of a necrotic carcinoma of a considerable degree of malignancy.

The patient improved in health and remained well for six and a half years, when the symptoms reappeared. Examination some time after the first operation revealed a ventral hernia at the site of the scar with an induration in the abdomen underneath the scar. Shortly before the second operation she had been injured in the right side.

Examination revealed a tumor in the abdomen at the site of the old scar, which moved with the liver on respiration. X-ray revealed a mass projecting over and pressing on the transverse colon enough to press the contents immediately under it to one side. A diagnosis of tumor was made.

A second operation revealed a tumor the size of a grapefruit enclosed in a fibrous capsule. The mass was enucleated by blunt dissection. Bleeding was moderate and easily controlled. A rubber tube and gauze packing were again used, with partial closure of the wound. The patient died one hour after the operation from symptoms resembling embolism. No necropsy was obtained.

The pathological diagnosis was a tumor which might be taken for a mixed cell sarcoma, but fibrous stroma forming alveoli filled with epithelial cells not associated with blood-vessels led to a diagnosis of carcinoma. That part which appeared sarcomatous was decided to be inflammatory, or a fibrous mass which had undergone necrosis. The presence of bile pigments suggested hepatic origin of tissue.

The tissue was so necrotic that the true picture was obscured. Yeomans looked up the literature five years ago, and at that time 9 cases had been reported. He gives a table of cases reported from 1909 to 1914 embracing 7 more cases, making 16 in all. He quotes Eggel as classifying primary carcinoma of the liver as occurring in three forms: (1) massive mostly in the right lobe, (2) infiltrating, very rare, (3) nodular; usually one primary with several smaller nodules, the usual primary type. The prognosis is hopeless. The differential diagnosis is from hepatic abscess, hydatid or other cyst of liver, tumor of stomach, colon, mesentery, pancreas, or kidney; gall-stones, aneurism of aorta, fibroid of uterus, and ovarian cyst.

He recommends early exploration of the masses in the right upper quadrant. DONALD S. GORDON.

Irwin, H. C., and MacCarty, W. C.: Papilloma of the Gall-Bladder; Report of Eighty-Five Cases. *Ann. Surg.*, Phila., 1915, lxi, 725.

Among 2,168 gall-bladders which were examined between January 1, 1907, and January 1, 1915, 85 specimens were found in which one or more papillomata were seen.

In all cases the mucosa was intact. The papillomata vary from twice to five or six times the length of normal villi. They are usually pedunculated, frequently racemose, and usually white or yellow. They appear in any portion of the organ, being confined neither to the neck nor the fundus.

Upon microscopic section they appear to be hypertrophic villi, the tissue elements of which present a hyperplastic condition. The connective tissue and glandular tissues are greatly increased, the latter being so distorted that sections cut the glands in many different planes. The epithelium of the glands is hypertrophic and occasionally hyperplastic, and practically always completely covers the growth.

In the stroma one often finds large round or oval cells which contain fat or some fatty substance, this condition probably being responsible for the yellowish gross appearance of the growths.

In no case were there any signs of early carcinoma, although similar hypertrophic conditions of the villi have been seen in association with carcinomatous outgrowths of the gall-bladder.

The condition occurred in cholecystitis catarrhalis acuta, cholecystitis catarrhalis chronica, cholecystitis catarrhalis cystica, cholecystitis catarrhalis carcinomatosa, and cholecystitis catarrhalis purulenta necrotica.

It occurred with and without the association of stones and was found more frequently in females than males, probably due to the fact that more gall-bladders were removed in females.

The authors report these cases in order to stimulate observers to watch for the association of the condition with malignant changes in the mucosa, since it is associated with chronic inflammation and has been associated with late carcinoma.

It is quite possible, in the light of recently dis-

covered facts relative to the stages of epithelial hyperplasia from chronic irritation, that these fibro-epithelial proliferations may also present the stages which are apparently a part of a cytological reaction, which ends in a malignant condition.

Hubbard, J. C., and Kimpton, A. R.: Gall-Stones. *Ann. Surg.*, Phila., 1915, lxi, 535.

The authors report observations and statistics in 226 cases of gall-stones in the Boston City Hospital. Stones were found at operation in every case studied.

There were three times as many women as men operated on, and 60 per cent of the cases fall between 30 and 50 years. Previous attacks of typhoid occurred in 28 per cent, and indigestion severe enough to be noted by the patient in two-thirds of the cases.

Pain occurred in 212 cases, most commonly in the right hypochondrium and epigastrium. It may occur on the left side. In 46 per cent of cases, the pain radiated to other parts; in 45 per cent to the back; and in 23 per cent to the right shoulder. Vomiting was present in 62 per cent of cases and rarely contained blood.

In 107 cases, or 48 per cent, jaundice of some grade was noted. The stones in 70 cases were in the gall-bladder, and in 25 cases in the common duct. It is doubtful if the presence or absence of jaundice aids in diagnosing the position of the stone.

Chills were infrequent and invariably accompanied a grave condition in the gall-bladder.

Tenderness and spasm together occurred on physical examination in the right upper quadrant in 107 cases; tenderness alone in this situation in 56 cases. An abdominal mass was felt in 49 cases and the liver was palpable in 23.

At operation adhesions were found in 28 per cent. Of 23 cases of contracted bladders, 38 per cent had stone in the common duct, while in 54 cases of distended bladders 7 per cent had stone in this situation, thus conforming to Courvoisier's Law.

Cholecystostomy was done in 177 cases and cholecystectomy in 24. As a rule the convalescence was uneventful, with the exception of pulmonary complications in 14 cases.

Of the series, 31 cases, or 13 per cent, died. All these were of the most serious type; 8 were inflamed, necrotic, or perforated, and 16 had stones in the ducts. A detailed report is given of 9 of the more interesting cases, showing that the most common causes of death are pulmonary complications and gradual progressive weakness. The latter being most resistant to treatment.

After combining figures from various hospitals Codman finds the average mortality to be 7.5.

Of 91 cases followed, 81 per cent consider themselves cured. The failures are usually due to a failure to remove all stones or to too short drainage.

The author concludes that (1) gall-stones occur most frequently in women; (2) the history and examination are usually suggestive of gall-stones;

(3) a permanent cure in the majority of cases is obtained by primary operation; and (4) the chief complications are pulmonary and asthenic.

PHILLIPS M. CHASE.

Ohly, A.: Chemistry of the Stomach in Gall-Stone Disease; Etiology and Treatment (Beitrag zur Frage des Magenchemismus bei Gallenblasenerkrankungen; Ätiologie und Therapie). *Arch. f. Verdauungskr.*, 1915, xxi, 128.

Ohly gives the results of examination of the stomach contents in 87 cases of gall-stone disease: in 19 there was hyperacidity, in 13 normal stomach contents, and in 46 sub- or anacidity. The majority of the chronic cases show sub- or anacidity. In most of these cases palpation showed marked changes in the liver. Most of the cases with hyperacidity are acute cases in which the disease is recent. As these are the cases that most frequently come to the surgeon's attention there is a prevailing opinion among surgeons that gall-bladder disease is accompanied by hyperacidity.

There are a number of factors in the etiology of gall-stones. It has been shown that pure cholesterol stones may arise in sterile bile, while the mixed stones are due to stasis and infection. Patients with pure cholesterol stones may have no symptoms at all or only those of secondary stomach disturbance; and although the stomach condition is more often secondary to the gall-bladder condition, we may find inflammation of the gall-bladder secondary to stomach disease. Other factors in the production of gall-stones are infectious diseases, especially influenza and typhus, and disturbances in metabolism. In many cases there is an inherited tendency to other disturbances of metabolism also, such as gout, obesity, and diabetes mellitus. In one of the cases reported the gall-stones were associated with diabetes, and Ohly believes that this combination is not very unusual.

In treatment it must be remembered that these secondary disturbances do not disappear simply from the removal of the gall-stones, but that adequate dietetic and hygienic after-treatment must be given.

A. GOSS.

Gewin, W. C.: Cholecystostomy or Cholecystectomy in Gall-Bladder Disease. *Am. J. Surg.*, 1915, xxix, 219.

Gewin gives a résumé of the status of cholecystostomy and cholecystectomy together with his own opinion of the two procedures.

To him, the mere diagnosis of stones or gall-bladder infection indicates operation, as the presence of stones is always evidence of a pathological condition. The earlier the operation, the safer the procedure. In these simple cases, Mayo gives the percentage of cures as 95.

Gewin believes there are as yet no well-defined principles which can invariably be followed in the treatment and management of these cases. Formerly cholecystostomy was recommended by prominent

men (the Mayos, Frank, Power, etc.), but today the trend is toward cholecystectomy, as shown by the writings of these same men.

As for the "ideal" operation, i.e., closure of the gall-bladder without drainage, he believes it should have absolutely no place in gall-bladder surgery.

The re-formation of gall-stones is considered very rare, and in those cases where they have been supposed to re-form, in the author's opinion the stones have been overlooked at the primary operation. Maurice Richardson is quoted as never having seen a case of re-formation of gall-stones.

The author concludes that the decision between the two procedures is largely a question of technical expediency in a given case, and that only mature judgment can dictate what is best. P. M. CHASE.

Medak, E., and Pribram, B. O.: Clinical Value of Examination of the Bile (Klinisch-pathologische Bewertung von Gallenuntersuchungen am Krankenbett). *Berl. klin. Wchnschr.*, 1915, lii, 706, 740.

It has long been believed that examination of the bile would yield valuable clinical information, but only since the introduction of Einhorn's duodenal sound has it been possible to obtain it for examination. Medak and Pribram report the results of their examination of the duodenal contents in various pathological conditions. They describe the technique of their examination for coloring matter and cholesterin.

There is an increased amount of bile pigment in all hæmolytic diseases; that is, those diseases in which there is increased destruction of red blood-cells, such as congenital and acquired icterus, pernicious anæmia, and Banti's disease. A marked increase in bile pigment is a sure sign of increased destruction of red cells, and in connection with anæmia, an indication for splenectomy. After splenectomy the color of the bile returns to normal and there is an increase in the number of erythrocytes. They thought that the demonstration of urobilin in the duodenal contents might be used in the diagnosis of cholelithiasis, but they found it of value only when negative. When it is negative infection of the bile tract is excluded, but a positive finding may be caused also by liver insufficiency.

During the menstrual period there is an increased destruction of leucocytes and therefore increase of coloring matter in the bile. The cholesterin content of the blood is increased in cholelithiasis, kidney diseases with high blood-pressure, hypertrophic cirrhosis of the liver, catarrhal icterus, and diabetes. This hypercholesterinæmia is probably due to retention, as there is a decreased excretion of cholesterin in the bile in these cases. After splenectomy the cholesterin in the blood increases, while that excreted in the bile decreases. In pregnancy the cholesterin content of the blood decreases from month to month. This seems to confirm Neumann's and Hermann's hypothesis of lipid retention; their theory being that the lipoids are retained to be used during the period of lactation. A. Goss.

Gerster, J. C. A.: The Feeding of Bile Collected from Biliary Fistulæ in Obstruction. *J. Am. M. Ass.*, 1915, lxiv, 1900.

In 1912 Schmilinsky reported a case wherein he fed bile to a man with a biliary fistula, after resection of the stomach, with excellent results; and Gerster adds one other.

The patient, aged 44, gave a history of gall-bladder disease and in an intensely septic condition, with a right hypochondriac mass reaching to the umbilicus. Upon opening the abdomen a large pericholecystitic abscess was found. The gall-bladder showed a severe cholangitis, but owing to the patient's condition nothing more than drainage was undertaken.

Convalescence was very much disturbed, being complicated by bleeding from the gall-bladder and by bronchitis. Seven weeks later there was a condition of profound asthenia, with all the bile draining through a fistula.

The bile was collected and fed through a stomach-tube twice a day 16 ounces each day. No nausea was present.

Two weeks later the patient's condition was so improved that a further operation was attempted and an impacted stone removed supraduodenally from the papilla of Vater. Drainage was introduced. This convalescence was uneventful and the patient has remained cured.

Gerster concludes that the administration of bile in physiological quantities in cases of biliary fistulæ with common duct obstruction is distinctly worthy of trial when the case becomes debilitated and asthenic. P. M. CHASE.

Philippowicz, J.: Surgery of the Common Bile-Duct (Über Choledochus-Chirurgie). *Beitr. z. klin. Chir.*, 1915, xcv, 487.

In affections of the gall-bladder most German surgeons, in contrast to the American and English ones, prefer cholecystectomy; but there is considerable difference of opinion as to whether this should be combined with drainage of the common or hepatic ducts. Philippowicz always performs cystectomy, but adds drainage of the hepatic only in certain cases. He does not drain if there is no history and no symptoms of infection of the ducts, or even if there is a history of duct involvement at some past time and objective examination during operation does not indicate it as present.

In acute occlusion of the duct by a stone, most surgeons leave the patient to the internist, but the author believes that if there are no signs of relief from the occlusion within a few days, operation should be performed. If there are signs of cholangitis such as chills, fever, pain, vomiting and other signs of irritation of the peritoneum, there should be no delay. There is no object in putting the operation off until adhesions and cicatricial tissue have been formed and the patient's general condition is worse; moreover if operation is deferred there is the danger of involvement of the pancreas,

which gives rise to further serious complications. The mortality of operation in the early stages is not over 2 per cent.

The incision should be longitudinal in view of the rather frequent anomalies of the blood-vessels; it can then be lengthened at will and more favorable conditions for drainage secured, though a transverse incision is probably better from the point of view of avoiding later strictures. The duct should be carefully sounded and if possible, explored digitally to be sure that all stones are removed. The stones should never be crushed as was formerly done. They may injure the mucous membrane, causing inflammatory processes and recurrence.

According to the opinion of the most skillful gall-stone operators, Kehr, Körte, and Poppert, drainage should always be established by means of T-drains with lateral openings. If the stone is in the retro-duodenal or pancreatic part of the duct, Kocher's mobilization of the duodenum is to be heartily recommended. In this way the place can often be brought into view, the stone pushed up into the supraduodenal part and extracted there. If this is not possible or adhesions prevent mobilization of the duodenum, transduodenal choledochotomy or papillectomy may be performed by MacBurney's method. According to von Büngner the end of the duct in about 90 per cent of the cases runs into the head of the pancreas. In many cases it is necessary to traverse the head of the pancreas to reach the stone, and this subjects the patient to the same dangers as any injury of the pancreas. If the occlusion of the end of the common duct is of such a nature that it cannot be overcome, as in carcinoma or certain forms of chronic indurative pancreatitis, the last resort is an anastomosis between the common or hepatic duct, or gall-bladder, and the stomach, duodenum, or jejunum. In order to simulate physiological conditions as much as possible it is preferable to utilize the duodenum. Kehr prefers anastomosis between the gall-bladder and the stomach, Mayo between the hepatic duct and the duodenum, Küttner lateral anastomosis between the common duct and the duodenum.

If there are small defects, especially in the anterior wall of the duct, such as are sometimes produced during the operation, it is best to insert a T-drain. Large defects may be covered with flaps from the neighboring parts, the duodenum, stomach, or gall-bladder. If the duodenal segment of the common duct cannot be found or is completely obliterated, Verhoogen and Jenckel's plan may be followed. They substitute for the duct a rubber drain between the central stump and the duodenum. In extreme cases Kuhn's method may be practiced; viz., establishing both duct and jejunal fistulæ in the abdominal wall, and at a second operation uniting them with a rubber tube. As no symptoms of stricture appear after the Verhoogen-Jenckel method, it may be assumed that a true mucous membrane canal is formed. Brever has formed a bile-duct from omentum; Kausch

from an intestinal loop; Giordano from a transplanted vein.

With reference to after-treatment, T-drains should be removed the eighth day; others are ordinarily left 14 days. Kehr attaches special importance to irrigating the gall-ducts as thoroughly as possible to be sure of removing all stones, but this procedure is painful and unpleasant for the patient and necessitates the use of large tampons, with the resultant danger of hernia. It is preferable to make very sure of having removed all stones at the operation. An unusual form of common duct disease is idiopathic cyst, which should be treated by anastomosis with the intestine. Foreign bodies and parasites can be successfully removed by choledochotomy.

According to the most recent statistics of ectomy with drainage in a not too far advanced stage, the total mortality is 2 or 3 per cent, and permanent recoveries over 90 per cent. A. Goss.

Mehliß: Acute Pancreatitis (Über akute Pancreatitis). *München. med. Wchnschr.*, 1915, lxxi, 436, 472.

In the past six years the author has treated 8 cases of acute pancreatitis in which the diagnosis was confirmed by operation or autopsy. Of the 7 patients operated upon, 5 died; the patient not operated upon also died. In 6 of the cases operated upon there were changes in the gall-bladder, and also in the case not operated upon. In 2 of the cases there was sugar in the urine. In all of the 8 cases there were fat necroses in the omentum and peritoneum that indicated disease of the pancreas.

The cases may be divided into two groups, according to the degree to which the disease has progressed: (1) those in which the pancreas is swollen and hard and hæmorrhagic, and (2) those in which necrosis and suppuration has begun.

Körte had 16 recoveries from 21 operations in the first group and 2 recoveries in 13 operations in the second group.

The disease often begins suddenly with attacks of severe pain in the region of the stomach or gall-bladder, and vomiting. In 4 of the 8 cases described the pain was in the left epigastrium and there was also sensitiveness on pressure. The face is cyanotic and there are signs of peritonitis. Many of the patients are obese and have had symptoms of gall-stones for years. If in addition to these facts there is sugar in the urine, an exploratory operation on the suspicion of pancreatitis is justified, for if operation is not performed at once necrosis may take place within a few hours. A. Goss.

MISCELLANEOUS

Soresi, A. L.: Reconstruction and Repair of Abdominal Organs with Intestinal Grafting. *Surg., Gynec. & Obst.*, 1915, xx, 668.

Soresi's fundamental idea in the preparation of his paper was to conduct a systematic study to

learn under what conditions it is possible to graft a piece of small intestine so that a reconstructive instead of a demolishing operation might be performed. By reconstructing or repairing the abdominal organs in such a manner that after the operation they retained their anatomical form and physiological function.

The usual procedure is to resect a piece of small intestine of suitable size from the most accessible portion, leaving it attached to the root of the mesentery by its own blood-vessels, and graft wherever necessary. The author has applied this principle to the following conditions:

(1) Reconstruction of the pylorus; (2) patching up defects of the stomach and intestine; (3) the construction of the common biliary duct; (4) establishing the continuity of any portion of the colon after extensive resection of same.

1. In reconstruction of the pylorus Soresi resects a piece of the small intestine, about 3 centimeters in length, and with a serous suture secures it over the pylorus; then, a longitudinal incision is made through the pylorus extending about two centimeters on the duodenum and two centimeters on the stomach. The intestine is also cut longitudinally

so that it opens and presents itself as a large square piece. This is secured over the longitudinal cut to the pylorus with a through-and-through suture reinforced by the completing of a serous suture.

2. In patching up the defection of stomach and intestine the same procedure is applied as in the reconstruction of the pylorus.

3. In reconstruction of the common biliary duct a piece of small intestine, one end of which is inverted, is secured against the liver taking into its lumen the end of the common duct; the other end of the intestine is implanted in the duodenum.

4. In reestablishing the continuity of a portion of the colon after prolonged extension of the same a suitable piece of small intestine is anastomosed to the two stumps of the colon, filling the gap left between them with the grafted piece of small intestine. Soresi states that the grafting of abdominal organs is useless unless a perfect blood supply is provided, and advises his method of intestinal anastomosis, which is a medium between end-to-end and lateral anastomosis. This procedure has been successful, and Soresi states that it can be applied by competent surgeons in their clinical work.

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS. CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Smith, F. D.: The Periosteal Regeneration of Bone.
Surg., Gynec. & Obst., 1915, xx, 547.

Smith gives a report on animal experimentation to determine the exact constituents of the periosteum, either as it exists intact or as it exists after it has been stripped from the compact bone. The periosteum in a surgical sense is an extremely variable structure and is dependent upon the individual performing the subperiosteal resection. From a surgical standpoint the periosteum is that membrane which remains after a careful subperiosteal resection of the underlying bone, especial care being exercised that no bone elements are left behind. The cellular elements of the periosteum are increased either by toxic, chemical, or mechanical causes. Therefore it would be expected that in experiments produced with such a varying structure, although all other details were identically carried out, the results would be at a greater or less variance with each other even so far as absolutely contradictory results were concerned.

From the histological study of the intact periosteum there is no demonstrable line of separation between the periosteum and the compact bone. Occasionally an artificial line of separation is produced during the fixing process.

The histological elements of the periosteum vary with the method of subperiosteal resection;

i.e., periosteum obtained with a quick stroke of the periosteotome differs from that obtained with a slow raising motion of the instrument. It is possible at the present time to vary the end-results according to certain technique; i.e., periosteum stripped quickly and with a sharp periosteotome will produce bone in a greater percentage of cases if young animals are employed than if adult animals are used. Likewise a greater percentage of positive results will be obtained with periosteum stripped slowly and with an elevating action of the periosteotome, than when the periosteum is quickly torn loose from the compact bone. A large percentage of positive results can be obtained by using very young animals and small strips of periosteum.

During the stage of developing bone the periosteum contains an active third layer, which the author calls the periosseous layer, in which is found fine connective-tissue fibrils, numerous small blood-vessels, and rows of small cells, the osteoblasts. After the growth of bone has ceased, this periosseous layer diminishes to a few remnants of its former structure and contains few small blood-vessels and only an occasional osteoblast. The histological structure of the periosseous layer is intimately associated with the function of the periosteum; its cellular elements increase or decrease numerically directly with the physiological or pathological variation of its function. In adult bone its function is slightly different from that of young bone and extremely at variance with that of irritated bone.

Fibrin is an active stimulant to osteoblastic activity.

The end-results of the transplantation of periosteum are dependent upon the following factors:

1. Stage of bone development.
2. Manner in which subperiosteal resection is performed.
3. Condition suitable to fibrin formation.
4. Sufficient blood supply.

Prentiss, C. W.: The Origin and Fate of the Osteoclasts. *Surg., Gynec. & Obst.*, 1915, xx, 678.

Osteoclasts or polykaryocytes have been derived by different investigators from fused osteoblasts, from fused bone-cells, from the endothelial cells of capillaries, from lymphoid cells, and from the reticular cells of bone-marrow. Their numerous nuclei have been regarded as arising (1) by mitotic division, (2) from the nuclei of fused bone-cells, and (3) from the fusion of small osteoclasts. The osteoclasts are believed by most authorities to be the active agents in resorbing bone, but there is no evidence as to how the dissolution of the bone is accomplished. Some regard them as amœboid phagocytes, some as cells which may reverse their functions and again produce bone, while others believe that they are degenerating cells, the products of bone-dissolution. According to Maximow they have much in common with the giant cells of bone-tumors and those which appear about foreign bodies in inflammatory or atrophic tissue.

The author, after a study of the bone-tissue in the mandible and maxillæ of human and pig embryos, concludes that in the early stages of bone development osteoclasts may be formed from the reticular cells of the bone-marrow. In later stages osteoblasts which have ceased secreting bone form a syncytium of flattened cells. By an increase in the amount of their cytoplasm, which also becomes vacuolated and strongly eosinophilic, the osteoblasts are converted into osteoclasts. During the resorption of the bone matrix, apparently by the osteoclasts, other osteoblasts and bone-cells are taken up into, and become a part of, the osteoclasts.

Thus the nuclei of the osteoclasts increase rapidly in number although no case of nuclear division was observed. Ultimately many of the osteoclasts undergo complete degeneration, while others may be resolved into the cellular reticulum of the bone-marrow. It is improbable that they again take part in the formation of bone-tissue.

Pryor, J. H.: A Preliminary Report on the Rollier Treatment for So-called Surgical Tuberculosis. *N. Y. St. J. Med.*, 1915, xv, 208.

The author protests against the neglect of constitutional treatment for non-pulmonary tuberculosis. When the tuberculosis is pulmonary it is the custom to give the patient all the hygienic benefits of fresh air, high altitude, and sunshine, while those suffering from the disease in other parts of

the body, and they are usually children, are regarded as "surgical" cases and kept in a closed ward. Admitting that in some instances surgical interference is necessary it is urged that such treatment should be supplemented by all the influences which can contribute to the general hygiene of the patient. The introduction of heliotherapy in Europe is the result of appreciation of these facts and impatience with the old routine methods.

Although direct sunlight for therapeutic purposes has been used to some extent for centuries it is only recently that the method has been put on a scientific basis. Credit for this is due especially to Rollier of Switzerland. His method consists in gradually exposing the entire body to direct sun rays, carefully avoiding sunburn by beginning with five-minute exposures every hour of feet and ankles only on the first day, increasing the time and the area exposed until the entire body is exposed and deeply pigmented. Finally after a deep tan is obtained the diseased part is exposed. The patients are kept on beds, and mechanical apparatus for fixation and extension are applied where necessary. His case reports for the past ten years show over 80 per cent cures in closed cases and over 70 per cent in open cases. His clinic is at an altitude of 4,200 feet and there are about 700 patients.

The author has been carrying out the Rollier method near Buffalo at an altitude of 1,650 feet and has shown that this climate is not prohibitive to the method. Two factors have worked against the method, the lack of coöperation on the part of the patients and the long periods of cloudy weather experienced at certain seasons. In spite of these obstacles Pryor seems to have established an institution for heliotherapy which gives promise of valuable results. So far his case reports show many cures of tubercular adenitis and arthritis. Drainage has ceased and sinuses have closed in some cases. Final reports are not made on account of the short time of treatment. W. A. CLARK.

Hackenbruch: Treatment of Surgical Tuberculosis with Tuberculin "Rosenbach." *Deutsche med. Wchnschr.*, 1915, Apr. 22.

The technique of the method is given. The injections are used in initial doses of 0.1 to 0.5. Eighty-one cases were treated, most of them joint and glandular tuberculosis. According to the author's experience the favorable influence of the tuberculin "Rosenbach" injections was clearly manifest. The general condition was improved, local pain was diminished, and the fistulous secretion stopped gradually. The tuberculin "Rosenbach" is recommended both for diagnostic and therapeutic purposes. In carefully increased dosage given for a number of months it has a decided curative effect, especially in conjunction with the current methods of conservative treatment, as Bier's hyperæmia, heliotherapy, and iodine medication.

A. STEINDLER.

Matthews, A. A.: Secondary Carcinoma of the Bone. *N. Y. M. J.*, 1915, ci, 1150.

The author reports a case of his own, and extensively reviews the literature on the subject. He finds that secondary carcinoma of the bone is not as rare as generally supposed, and is of clinical interest in connection with lumbago, rheumatism, etc. It has even been stated that metastasis into the bone is frequently the first evidence of prostatic tumor. He agrees with von Recklinghausen and Thiele, and others that these metastatic growths occur primarily in the medullary bones and spread to the subperiosteal tissue through the foramina; that the growths occur especially in the bones which are most liable to trauma; that the bone changes may be either simple erosion of the bone by growth, or great expansion of the bone, or infiltration of the bone without marked expansion but with osteoplastic changes; or extension of the growth of the subperiosteal tissues, with or without osteoplastic changes in the subperiosteal growths. Metastasis occurs through the veins. The bones most frequently involved are vertebra, flat bones of the skull, and bones of the upper and lower extremities. The chief sources of secondary deposits in bones are carcinoma of the prostate, the thyroid and mammary glands. DEFOREST P. WILLARD.

Moore, J. E.: Some of the Rarer Forms of Joint-Disease. *J. Lancet*, 1915, xxxv, 234.

Moore discusses four joint conditions which are commonly incorrectly diagnosed by the average practitioner because of their rarity.

Caries sicca he describes as a form of tuberculous joint disease most commonly affecting the shoulder, and is characterized by pain, increasing limitation of motion, and atrophy of the humerus. There is absence of suppuration. The treatment is absolute rest in plaster if necessary. The prognosis is good as to cure but there is usually complete ankylosis.

Hydrops articuli usually affects the knee and is a simple subacute inflammation characterized by gradual painless distention of the joint which becomes fusiform in shape. It may be limited to one knee or both may be involved. The author is inclined to consider it a form of mild tuberculosis. The treatment is rest with pressure. If this fails he advises aspiration and irrigation with a mild iodine solution repeated if necessary. The prognosis is good.

Charcot's disease, which occurs in the course of tabes dorsalis in about 10 per cent of cases, may precede the ataxia (a fact often overlooked) or appear some time after. The condition appears as a sudden, painless swelling of the joint which may in a few days assume considerable proportions. There is softening of the ligaments, cartilage, and articular ends of the bones, and complete disorganization of the joint. The treatment is supported by mechanical means, as resection has rarely been followed by union.

Hæmophilic joint develops in those with a hæmorrhagic diathesis and is characterized by an effusion of blood into the joint which may remain fluid for a long time and finally coagulate. The knee is most commonly affected and the condition is more frequent in males on account of their predisposition to hæmophilia. The onset is usually sudden and frequently preceded by injury; there is pain, tenderness, and a rise of temperature, due to absorption. The course of the disease is essentially chronic and it is difficult to make a diagnosis between this condition and tuberculosis unless there is a history of hæmophilia. It is important to make a diagnosis in this condition because of the danger to life if operation is attempted. The prognosis is grave, but not hopeless; there is a tendency to recurrence. The treatment consists in rest with elastic pressure and the hypodermic injection of 2 to 3 mm. of blood serum to increase the coagulability of the blood. FRANK D. DICKSON.

Macy, M. S.: Pituitary Gland in Gonorrhœal Arthritis; a Report of Three Consecutive Cases. *Med. Rec.*, 1915, lxxxvii, 1024.

Macy states that Wallace and Child gave intramuscularly a fresh preparation of pituitary of the ox in physiological salt solution to some cases of gonorrhœal arthritis, resulting in lessening of pain and swelling, and improvement in motion. The three cases here reported had received vaccines and other treatment. The secretions were repeatedly sterile, but the arthritis continued unabated. The cases were referred to the author for high-frequency treatment of the joints. Two cases had received the usual treatment, with thyroid in addition. Case 1 had fingers of both hands involved, in Case 2 the right was involved. High-frequency did no good, the pituitary preparation in tablet form was triturated, spread on the skin, and ionized into the joints by high-frequency current. Case 1 was well in two weeks, with no return in three months. Case 2 was well in six weeks. Not over two grains were used at a dose. Case 3 was in a boy of ten, the left knee and ankle being involved. Cure resulted in six weeks. The systemic effects of the pituitary preparation were those generally noted by observers. C. A. STONE.

Alexander, E. G.: Rupture of the Biceps Flexor Cubiti. *Ann. Surg.*, Phila., 1915, lxi, 608.

Rupture of the biceps tendon is a rare accident; the literature cites only 74 cases, 5 of which were operated upon. Alexander reports 8 cases of which 5 were operated upon.

The causes of this condition are direct force, muscular contraction, indirect force, as a fall on the shoulder; disease or malformation may be an underlying cause. In 6 of Alexander's cases the patients were 50 years old or over.

The rupture may occur through the belly of the short or long head, through the belly of the muscle proper, at the transition point of the belly and

tendon, through the tendon of the long head or tendon of the muscle.

The symptoms at the time of the injury may be slight, the patient noting nothing, or they may be severe and immediately incapacitate. Swelling and ecchymosis may but do not always accompany the rupture. The physical findings depend upon the site of rupture. Rupture through the belly gives a furrow between the two ends which can be widened by extending the forearm; in rupture of the tendon of insertion, flexion and supination of the forearm may be interfered with and the belly of the muscle drawn up nearer the shoulder. In rupture of the long head anywhere in its course we get bulging of the biceps at a point nearer the elbow than normal, a flabby condition of the muscle, an abrupt termination of the bulging above, and an inability to feel the tendon above that point, while the short head stands out prominently.

In the cases operated upon the ruptured belly was sutured in one case, in another the tendon of the long head was sutured to the belly of the muscle, and in three cases the ruptured long head was sutured to the short head.

FRANK D. DICKSON.

Imbert, L.: Pathogenesis of Phlegmons of the Hand (Sur la pathogénie des phlegmons de la main). *J. de chir.*, 1914, xiii, 157.

In practically all texts the statement is made that phlegmon of the hand extends from a felon of the thumb or little finger along the flexor tendons. Imbert holds that this is a mistake; the tendon sheaths are not involved, or at least only exceptionally, in the transmission of phlegmon. He finds that felons of the middle fingers are as frequently followed by phlegmon as those of the thumb, and that in these cases extension cannot be along the tendon sheaths. As a matter of fact the phlegmon is propagated either by continuity or by way of the lymph-vessels.

A. GOSS.

FRACTURES AND DISLOCATIONS

Knox, R. W.: Conservative Treatment of Fractures. *South. M. J.*, 1915, viii, 499.

Knox believes that the adoption of the radical method of treating fractures to the exclusion of the conservative method, is not the wisest course. He thinks the application of either method should depend on the character of the injury.

Lane's work, he believes, owes its success to almost perfect technique, and, in his opinion, in many cases as good results could be attained without operation.

He discusses the readjustment and immobilization of fractures, describing the difficulty in exactly coaptating the fragments and the inability to retain them in proper position, it often being necessary to open up the fracture and readjust the parts, holding them in place by a moulded plaster splint.

He does not look with favor upon bone-grafts, nails, wire, and steel-plates, as they act as foreign bodies and also necessitate much handling of tissues. He particularly recommends the conservative or non-operative method.

In regard to fractures of the femur, the old methods of treatment have been found unsuccessful and the use of the bone-plate with plaster immobilization is best.

He cites a case of fracture below the femoral neck which was treated by using a bone-plate to hold the fragments, followed by the application of a plaster cast around the pelvis incorporating both legs which were held in abduction. By this method the patient can be moved about, and have the advantage of out-door life.

In the treatment of compound comminuted fractures where there is no infection, he would hesitate to use a plate for fear of infection resulting. If infection is present a plate is used well above and below the fracture, after which plaster is applied, the pelvis and the entire leg being included in the cast.

When granulation of the wound takes place the bone-splint is removed. Where delayed union has taken place he advocates retention by means of casts and ambulation.

J. H. SHAW.

Cohn, I., and Mann, G.: The Repair of Fractures; an Experimental Study. *Surg., Gynec. & Obst.*, 1915, xx, 661.

The research was undertaken to study successive stages in callus formation, both macro- and microscopically, and to determine what part the periosteum plays in the process. Orth studied a 15-day and a 38-day specimen of human callus, cartilage being found in both specimens.

Cohn and Mann experimented on the fibulae of dogs. In one leg the periosteum was removed for a distance of one-half inch on either side of the fracture, while in the opposite leg the fibula was fractured through the periosteum. Judged macroscopically callus formation takes place as early in the absence as in the presence of periosteum. On the eighth day there is marked microscopic evidence of proliferation of the cortical layers of the old bone, the periosteum taking no part in this proliferation.

In the 14-day fracture in addition to the old bone proliferating, it is seen to have undergone metaplasia, because of the gradual transformation of bone into cartilage cells. The periosteum has been reformed at this stage, but it becomes compressed by the proliferating cartilage cells. The organizing fibrin clot and fibrous cartilage both take part in the callus formation.

After 18 days the callus is cartilaginous in character and is markedly vascular. The callus formation is from within outward. After 27 days, when the periosteum has been allowed to remain, the periosteum is pushed outward very considerably by the growing callus, but it plays no part in bone formation. Similar results are obtained after 38 days.

The authors conclude that following severe injury of the fibula, bone reacts by an active proliferation of osteoblasts from the cortical layers of the bone, this newly formed bone pushing the periosteum in front of it. For certain reasons not yet understood bone-cells undergo a chemical change which results in their conversion into cartilage. This cartilage after a time becomes invaded by medullary spaces, and eventually is replaced by true bone in the manner known to occur at the junction of epiphyses and diaphyses. The periosteum is not essential for a firm union after fracture.

Fifteen microphotographs accompany the article.

Campiche, P. S.: The Treatment of Closed Fractures; a Plea Against Unnecessary Operations.
J. Am. M. Ass., 1915, lxiv, 1633.

Campiche feels that the pendulum has swung too far toward operative treatment of fracture because of some poor results obtained conservatively. Many surgeons, following Lane, operate on all fractures, which, in connection with the X-ray, removes the necessity for the study of types and their individual care. All cases are treated alike—operation and plate—clavicle, femur, or Colles' fracture, it matters not what. About 80 per cent of such operations are unnecessary. The operation in itself would not be so bad if it were not for the by no means rare accidents to patients. The trouble with conservative methods is that a crooked arm or short leg remain in evidence, while the man operated on who becomes septic and dies joins the silent majority.

Caution should be the rule, since infection is prone to invade bruised structures of recent fractures, and deficient callus is the rule in the presence of foreign bodies. The field of a recent fracture with bruised tissues, bone fragments, hæmatoma, and poor circulation presents ideal conditions for infection. Despite various means of disinfecting the skin, the sweat and sebaceous glands retain bacteria and even though the hands are most carefully cleansed and covered with gloves and though the fingers never enter the wound, infections still occur. Covering the skin with towels clamped over the edge of the wound and using no instrument in the wound which has touched the skin, even though the skin has been coated with resinous or other preparations to plug the pores, or covered with oiled silk, does not always prevent fatalities or the loss of an entire limb from amputation following gangrene.

Experiments in plating or opening joints to drive nails through fragments are not conclusive since animals have a higher resistance to microorganisms, and the tissues are healthy to begin with. Plates, screws, ivory pegs, etc., delay union and cause deficient callus, according to McGruder and Stimson. Marked deformity alone (marked callus on the clavicle or femur without shortening or loss of function) is not an indication for operating. The preliminary report of the American Committee on Fractures is too favorable to operation. The

fundamental principle in fractures is anatomical reduction and fixation, but geometric outline is not necessary, according to Tuffier and Scudder, nor is it any excuse for the many operations done with that aim. Instead of crowding plating of fractures into a busy morning's work it should be of even more solemn procedure than a laparotomy, whose consequences in case of failure mean disaster to the patient and a blot on the escutcheon of the hospital and operator.

There has been a steady improvement in conservative methods in the last decade in the tendency to use plaster splints instead of circular plasters, and also the shortened time of retention and the general use of massage. Operations are best done at the end of the first week, and then only after painstaking preparations, and by a capable surgeon. When done on a large scale by chance operators, a high percentage of bad results follows. Very often it will be found a simple incision and manipulation will replace the fragments correctly. If fixation is demanded, the least foreign substance possible should be used.

C. A. STONE.

Trout, H. H.: Treatment of Ununited Fractures.
South. M. J., 1915, viii, 502.

In Trout's opinion the present increase of ununited fractures is frequently due to the use of the Lane plate, this plate as a foreign body limiting or preventing osteogenesis.

It is almost impossible to prevent infection in doing plate work, and Lane himself advises that the plate be not touched by the gloved hand.

Trout conducted a series of experiments on Belgian hares to prove that the plate or any other foreign body should not be used in treating fractures indiscriminately. The experiment showed that the majority of the rabbits that had a screw fixed in the bone through an infected field eventually expelled it through abscess formation. A number of rabbits were operated on also, the autogenous bone-graft being used through an infected field. The result showed 5 of the grafts not growing, but the remaining 30 healed perfectly.

The experiments go to prove that a foreign body is more apt to slough out than is the autogenous graft.

He cites a case of infected comminuted fracture where an autogenous bone-splint was used with perfect results.

Another series of experiments was performed with strict asepsis, metal screws being used in one collection of rabbits, while the autogenous graft was used in another collection, the results being that where the screws were used 40 per cent showed shortening of the limb, while in the autogenous bone-graft no shortening was observed.

J. H. SHAW.

Long, J. W.: The Operative Treatment of Fractures.
Am. J. Surg., 1915, xxix, 214.

Long is opposed to the open treatment of any fracture that can be properly reduced and held

by any other measure, because of the danger of infection.

The length of time that the patient is confined to the bed in certain fractures, as that of the shaft of the femur treated by Buck's extension, is a factor to be carefully considered, and tends toward favoring the open method in the interests of the patient.

In operating the wound should not be touched even with the gloved hand.

The necessary dexterity on the part of surgeon and operating nurse to do the "touchless" operation is readily acquired, especially by practice upon the lower animals. The results of this method are: no infection, prompt union, and early return of function. The necessity of removing a wire or plate usually means infection.

The author describes several cases of fractures treated by this method with illustrations showing excellent results.

H. W. WILCOX.

Lexer, E.: Operative Treatment of Fractures (Blutige Vereinigung von Knochenbrüchen). *Deutsche Ztschr. f. Chir.*, 1915, cxxxiii, 170.

Lexer describes 20 cases of operation for fracture, showing 26 illustrations, mostly röntgenograms of cases.

It is more frequently necessary to operate in war fractures than in those of civil life, because they are so often accompanied by infected wounds. Operation is indicated in old, badly healed fractures, in pseudarthroses, in multiple fractures of a limb, in fractures with extensive interposition of soft parts, in joint fractures with extreme displacement, and where important muscle attachments are torn away, as at the olecranon, patella, calcaneus, and trochanter major.

Any injury to the nerve calls for operation. Operation should not be performed during the first week, for the bone and surrounding tissues, especially the periosteum, require that length of time to recover from the injury; after that length of time, the sooner operation is performed the better. In case of wounds it is best to wait till they are completely healed, for if there is any granulating surface the danger of infection is greater. If it is necessary to operate while there are still granulating areas they should first be painted with iodine and then excised; the instruments used for this purpose must not be used in the further course of the operation on account of danger of infection.

Various methods of operation are discussed, together with the conditions under which each is indicated. All methods of operation in which a foreign body is left in the limb involve the danger of secondary infection. Nail extension is particularly dangerous in this respect. The ideal method of operation for fractures of the shafts of long bones is the use of living bone, either as a wedge inserted into the fractured ends or attached in the manner of a plate to the outside of the bone. As bone is living tissue it hastens callous formation, instead of delaying

it as an inert foreign body does. Care should always be taken in operating for fracture not to separate the periosteum from the surrounding soft parts, for the most important factor in the healing of a fracture is the nutrition of the periosteum by the abundant formation of new blood-vessels. The source of these new-formed nutritive vessels is the soft parts immediately around the periosteum.

The technique of bone transplantation in fractures is described in great detail, for Lexer believes that the longer time required for healing in operative than in closed cases of fracture, so frequently reported, is not due to anything inherent in the operation, but is caused by defects in technique. Anyone who operates with the strictest observance of asepsis, controls bleeding absolutely, and carefully avoids injuring the periosteum and its surrounding soft tissues is sure to have good results.

A. Goss.

Philippsthal and Rummelsburg, S.: Dangers of the Plaster Cast; a Useful Substitute for It (Die Gefahren des Gipsverbandes und ein Vorschlag zu seinem zweckmässigen Ersatz). *Deutsche med. Wchnschr.*, 1915, xli, 258.

The plaster cast should never be used in cases of infected fracture. Among 39 of the authors' cases 34 were infected, due to the fact that it was four to ten days before the soldiers could be brought to the hospital.

The fenestrated cast does not give room to observe the progress of an infection, and often the time for incision passes without being noticed and it suddenly becomes necessary to amputate. The progress of the infection is not always marked by high temperature. In cases where a great deal of secretion is flowing out through the opening the surrounding skin is injured, leading to eczema and skin abscesses. This develops new foci of infection from which the fracture wound is constantly being reinfected. The cast, too, becomes soiled and softened and loses its capacity for fixation; it also becomes very unsightly in a very short time, and thus interferes with the patient's comfort. Often as the infection progresses it is necessary to increase the size of the opening, and it may become so large that the fractured ends are not firmly fixed. Even then the wound cannot be kept under satisfactory observation. Two cases of pseudarthrosis and four of aneurism were not observed until completely developed.

In modern warfare the patients have to be transported frequently. Cases are described in which the fracture dressing was changed as many as five times. A dressing should be applied at first that will not need to be changed. The authors propose the following as a substitute for plaster:

The leg is covered with a sterile cloth and placed in a Volkmann splint that extends far beyond the fracture. It is fixed to the splint with cambric bandages, leaving a space free about a hand's breadth above and below the wound. Thus we have a rectangular opening, the two longer sides formed by the edges of the splint and the shorter ones by

the bandages. The free skin is anointed with mastisol and covered with Billroth's batiste provided with an opening for the wound. The strip is made wide enough so that it projects beyond the edges of the splint, and so prevents pus from getting under the splint. Gauze and a strip of adhesive plaster over it complete the dressing; the latter can be removed for dressing the wound. When extension is necessary it can be attached to the cambric bandages. During transportation it is necessary to fix the hip-joint. For this purpose a wire splint is attached to the Volkmann splint by means of a metal strip 5 cm. broad, fastened to the Volkmann splint by means of two clamps, in such a way that the wire splint can be moved up and down to any desired height. The wire splint encloses the pelvis, and because of the small distance from the end of the Volkmann splint to the pelvis and the breadth of the metal strip, any spiral twisting of it is impossible. This splint should be used except in cases of simple fracture, where the plaster cast may safely be applied.

A. Goss.

Burnham, A. C.: Fracture of the Pelvis. *Ann. Surg., Phila., 1915, lxi, 703.*

Fracture of the pelvis is a more common injury than is generally supposed, many cases not being recognized until long after the injury because the examination is not thorough enough.

This paper is based upon the records of 29 cases treated in one hospital during a period of six years. During the same period there were 143 cases of fracture of the femur and 16 of fracture of the vertebrae.

Pelvic fractures may be single or multiple, the single being most frequent, and the ilium the portion most often involved because of its exposed position.

In multiple fractures the line of fracture passes through the pelvis at two points; separation of the sacro-iliac joint may accompany such injuries.

Fracture of the acetabulum is unusual, but if the force of the trauma is transmitted through the head of the femur the floor of the socket may be broken and the femoral head enter the pelvis.

Pelvic fracture occurs at all ages, and in both sexes, but is more frequent in the male.

In addition to the local symptoms of fracture, shock is often severe, but death from an uncomplicated fracture is rare. Fever is the rule in these cases, reaching the highest point the day after the injury and falling gradually to normal.

Abdominal symptoms are usually present, there being some muscular rigidity and tenderness. The genito-urinary complications are the most important 38 per cent of this series showing either hæmaturia, retention of urine, or dysuria, and in one case there was rupture of the bladder.

The treatment of uncomplicated fracture consists in rest in bed in the position most comfortable to the patient.

Shock should be treated along the well-established

lines; reduction of the fracture may be accomplished manually through the rectum or the vagina, or open reduction may be necessary. Buck's extension applied to the injured side may be of aid in reduction and in relieving pain. The genito-urinary complications are treated according to the indications.

In this series operative interference was necessary in only three cases. Less than one per cent of these cases if uncomplicated end fatally. Permanent return of function, however, is not good; pain, weakness, and some lameness persist for a considerable time.

H. W. WILCOX.

Vander Veer, A., and E. A.: Simultaneous Fractures of Both Femurs. *Ann. Surg., Phila., 1915, lxi, 715.*

The authors report an unusual case of comminuted fracture of the shaft of each femur at the junction of the middle and lower third, caused by a crushing injury.

The fractures were reduced under anæsthesia, the right femur being plated and the left side put into a plaster cast and traction applied.

The patient was out of bed in nine weeks and sitting in a Morris chair. He soon began to use crutches but had great difficulty at first. The plaster cast was removed at the end of four months. The X-ray pictures which accompany the article show the right femur, which was plated, healed in good alignment; in the left femur there is quite a noticeable bending at the fractured point, due to defective callus formation and a gradual giving way of the bone after the patient began to walk.

H. W. WILCOX.

Downey, J. H.: Treatment of Fracture of the Femur by Means of a Double Angular Plaster Splint; the Technique of Its Application and Advantages Claimed for It. *South. M. J., 1915, viii, 525.*

Downey says this is no new fad, but a tried and proved procedure. He considers Esmarch's double inclined plane of much value, but cumbersome and confining. A cast applied in the usual way lets the leg slip after the padding has mashed down and the muscles have atrophied, displaced fragments being the result. By putting the leg in Esmarch's position, and bringing the broken ends together by traction, then applying a properly fitting cast, the limb is placed in a restful position, with relaxed muscles. A long fragment can also be made to conform to a short one over which often there is little control; further, the flexion prevents rotation and telescoping inside the cast. The freedom and comfort of the patient in this fixed angular position makes it easier for him to sit and use crutches, and it also lessens pain.

The cast is applied in two sections. The first from the base of the toes to three or four inches above the knee according to the site of the fracture, the second from this to the nipple line. The part

of the cast on the leg to above the knee is applied before setting the bone. It is allowed to harden, then the fragments are replaced, and a good strong cast put on up to the nipples. If swelling is feared, the cast may be split up the leg. The author considers this method exceptionally good in fractures of the neck in old people. In the last six years he has not had a case of simple fracture of the femur stay in bed longer than five days, and rarely has had to use an opiate after 48 hours. C. A. STONE.

Smith, E. H.: A Consideration of Fractures of the Long Bones with Reference to Operative Treatment. *Pacific M. J.*, 1915, lviii, 304.

Smith calls attention to the fact that, whereas before the X-ray was used, transverse fractures were considered easy to treat and oblique ones difficult, we now find that in transverse fractures there is much more danger of overlapping and deformity. In surgical treatment, wiring enables us easily to obtain good position in oblique fractures, but in transverse fractures wiring is not satisfactory.

In comminuted fractures, early operation is very difficult; in general, operation should be delayed from ten days to two weeks. Foreign material (metal plates) should not be introduced for compound fractures. He says without qualification that ununited fractures should never be plated and that the bone transplant is the only thing to use. He says that all other methods are yielding to the autogenous bone transplant.

He objects to any operative procedure in the presence of infection and says that no compound fracture should be operated on within ten days or two weeks, and then only if sterile.

For fracture of the neck of the femur requiring operation, an autogenous-transplant from the tibia is recommended. An opening is to be cut through the trochanter and a peg driven through to the head of the femur. He says square pegs are better as they are less liable to work loose. If an autogenous transplant cannot be obtained, an ivory peg should be used. Smith prefers traction and sand bags to the plaster of Paris spica in the Whitman position.

He calls attention to the difficulty of operating on the humerus and to the frequency of bad results in fractures in the foot.

He concludes that the transplantation of bone from animals to human beings will never be a success and cites the failure of horticulturists to graft from apple to peach trees. He says we must depend upon autogenous material and work out our problems on that basis. H. WINNETT ORR.

Schaefer, C. D.: Fractures of the Patella. *Lancet-Clin.*, 1915, cxiii, 545.

Fracture of the patella is a rather frequent and annoying accident. The prognosis as to complete restoration of full joint function is usually uncertain, depending upon the method of treatment,

character of fracture, constitution and age of the patient. Advanced age of the patient; the refusal of operation; comminuted fractures without separation or tilting of the fragments and without tearing the soft parts around the patella demand non-operative treatment. The author believes all other cases should be treated by the open method.

To secure joint function after operation, blood-clots and fragments of the soft tissues must be carefully removed; the fracture surfaces brought lightly together and held in accurate apposition. The soft tissues must be carefully repaired. The author uses absorbable suture material for all tissues except the skin. He removes the splint after three weeks and allows the patient to move and bend the joint. In his article he describes his operative technique and after-treatment in detail.

R. O. RITTER.

Seubert: Use of Fascia Lata in Operations for Fracture of the Patella (Beitrag zur Verwendung der Fascia lata bei Eingriffen wegen Fraktur der Patella). *Zentralbl. f. Chir.*, 1915, xlii, 411.

A man of 52 fell and fractured his patella. There was a gap of fully 2 cm. between the fragments. Seubert brought them as near together as possible and sutured them with strong catgut. Then he laid a flap of fascia lata over the patella and sutured it all around with fine button sutures. Drainage was removed at the end of four days. Massage of the muscles of the thigh was begun the third day and on the tenth day movements of the knee-joint were begun. On the fourteenth day the patient could get up, and by the end of the fifth week he could climb stairs without difficulty. The motion in the knee-joint is now almost normal. The use of fascia in similar cases is advisable. A. Goss.

Gaugele, K.: Treatment of Congenital Hip Dislocation. *Ztschr. f. orthop. Chir.*, 1915, xxxiv.

The suggestion offered by the author involves mainly the after-treatment of the congenital hip dislocation. Until the normal position of the hip is obtained the after-treatment should rest entirely with the surgeon. For this reason he has devised, and uses for this period as a retention apparatus, a jointed steel frame embracing the pelvis and thigh, which can be adjusted so as to give the hip a gradually diminishing degree of abduction.

As to the method of reduction, the author prefers the technique of Lorenz. Interposition of capsule does not constitute an obstacle to reduction. In fact there is no serious obstacle in the first seven years, in the author's opinion. The antetorsion of the head, especially, does not cause as much difficulty in retention as is generally supposed. The method as described calls for plaster fixation of 10 to 15 weeks only, while the after-treatment is carried out in the brace for 6 to 10 months. Fifty cases are reported, all with good results; i. e., anatomical position of the head. All the cases were less than eight years of age. A. STEINDLER.

SURGERY OF THE BONES, JOINTS, ETC.

Trout, H. H.: Autogenous Bone-Grafts Versus Lane Plates. *Ann. Surg., Phila.*, 1915, lxi, 717.

In a well-illustrated article the case of the autogenous graft against the use of foreign material is well made out. The author calls attention to the history of buried material in the human body, in all cases return to no or absorbable material having taken place in the evolution of surgical technique and he believes that the Lane plate will be no exception to the rule. Upon inquiring of more than 100 American surgeons, he finds that all but 7 have been obliged to remove plates either in their own or other surgeons' cases, from which he concludes that the plates were either incorrectly placed or that it is a wrong procedure.

He and his assistants have carried out a number of experiments on animals with plates and autogenous grafts. Screws were inserted in 35 rabbits in the presence of infection and 25 autogenous grafts were used in the same way. In 5 cases an attempt was made to produce definite infection by the injection of colon bacilli, but the attempt was abandoned and the remainder were operated upon through soiled fields and the resulting infection ascertained. Of the first 5 all screws came to the surface in a few days. Of the others, 6 died from the anæsthetic and in 2 the screws remained in position after causing sinuses which finally closed, and in the remainder the screws came to the surface. Of the autogenous grafts in 25 rabbits, 3 died from the ether, leaving 22 rabbits with 44 grafts, a graft having been taken from each leg and inserted in the opposite bone. In these cases 5 grafts worked out, while the remaining 39 "took," as was demonstrated by X-rays and autopsies. In other words 92 per cent of the screws had to be removed while only 8 per cent remained after developing sinuses and 11 per cent of the grafts were removed leaving 89 per cent in place after six months.

In the next experiment a steel screw was placed in the upper epiphysis of the fibia in a series of 10 rabbits, varying in age from 4 to 6 months, asepsis being strictly observed. In 4 cases a shortening was noted in six months. An autogenous spicule of bone placed similarly resulted in no shortening in the same time.

Two cases are reported which resulted favorably after the use of autogenous grafts. The author describes and illustrates his type of motor-driven saw. C. E. WELLS.

Gill, A. B.: Transplantation of Entire Bones with Their Joint Surfaces. *Ann. Surg., Phila.*, 1915, lxi, 658.

The author transplanted 11 metatarsal bones in a series of experiments. In one experiment the dog was killed before healing had taken place; and in another one metatarsal bone was removed under ether. After seven to eight and one-half months the dogs were killed, and it was found that one trans-

plant had been almost entirely absorbed. One was badly distorted and one other moderately changed as a result of osteomyelitis. Five transplants were apparently normal and the function of the joints good.

Under microscopic study, where there had been no suppuration, no dead bone was discovered.

He discusses the theories of Murphy, Baschkirzew and Petrow, Barth, Axhausen, Macewen, Moyer and McWilliams, and sums up by saying that it can no longer be questioned that the inner, or osteogenetic, layer of the periosteum is of prime importance in the life and regeneration of a bone-graft; that the lining of the marrow cavities, in other words the endosteum, the lining of haversian canals, and the external covering of the bone, and the osteogenetic layer of the periosteum, are all one and the same thing; and that if a graft contains all three portions of osteoplastic tissue, its chances of life and development must surely be multiplied.

His conclusions are: (1) Bone is only a particular form of connective tissue and is readily transplanted. (2) It contains within itself all the elements necessary to life, function, and regeneration, provided it receives sufficient nourishment. (3) Periosteum, medulla, and bony tissue should all be included in the graft. (4) After transplantation the bone grows and moulds itself to perform its functions efficiently. (5) As early a performance of function as is consistent with its fixation in its new position is of great advantage. (6) A mild infection is not necessarily fatal to the graft. (7) Transplantation of long bones with their joint surfaces is clinically possible.

J. O. WALLACE.

Deutschländer, C.: Operative Mobilization of Ankylosed Knee-Joints (Zur operativen Mobilisierung der Knie-ankylosen). *Verhandl. d. deutsch. orthop. Gesellsch.*, 1915, xxxv, 34.

Deutschländer discusses the feasibility of transplanting the entire knee-joint in cases of ankylosis. Experimental and histological studies made by Lexer, Axhausen, and others would seem to indicate that complete restoration of function is possible by this method, but there are few reports of ultimate results in actual operations on human beings.

Two cases are described by the author. In one the entire knee-joint, including capsule, ligaments, and patella, was transplanted in a 13-year-old boy. Though the wound healed by first intention, three weeks after the operation the soft parts were discharged spontaneously, thus displacing the part of the transplant covering the tibia so that there was no further progress in the restoration of function, even though the usual after-treatment was carried out. Röntgen pictures taken at intervals showed gradual atrophy of the transplant, so that after nine months only traces of the transplanted cartilage were visible. At the end of a year even this had disappeared and there was complete reankylosis. Six illustrations are given showing the progress of the case.

The second case was in a 14-year-old boy, only bone and cartilage being transplanted, without soft parts. The wound healed by first intention, but the transplant atrophied so rapidly that at the end of three months another operation had to be undertaken. At this operation strips of fascia were interposed between the joint surfaces, and the results were better.

Definite conclusions of course cannot be drawn from two cases, but it seems doubtful whether in man, joint cartilage so extensive as that of the knee-joint can be transplanted and remain viable and permanently capable of functioning. It seems more probable that it will undergo the usual fate of highly differentiated tissue and gradually atrophy.

A. Goss.

Link, G.: Amputation for Fracture of the Femur in the Aged. *Am. J. Surg.*, 1915, xxix, 218.

Link advocates the unique procedure of amputating at the point of fracture in cases of aged people who have broken the femur, provided there is no impaction. In people over 60, the mortality is about 28 per cent by the end of six months with the old methods and there is always much permanent disability. With the new method the patient can be in a chair four days after amputating, and on crutches at the end of two weeks. Spinal anesthesia should be used when possible.

One case is cited of a man 73 with non-union after twelve weeks of ordinary treatment. Under ether, the amputation was done at the fracture, just below the trochanter major; four days later the man was up in a chair, and in two weeks was using crutches. Now he is able to attend to business.

C. A. STONE.

ORTHOPEDICS IN GENERAL

Ballner, J.: Weight-Bearing Stumps (Über die Tragfähigkeit des Amputationstumpfes). *Wien. klin. Wchnschr.*, 1915, xxviii, 285.

Among the various methods of amputation devised for procuring a stump that will bear the weight of the body without pain Ballner prefers that of Bunge, especially in amputations below the knee. In addition to neuromata, the factors that cause painful stumps are adhesions of the skin and soft parts, painful proliferation of the periosteum, and proliferation of the marrow causing a callus that exerts pressure on the skin.

Bunge's technique consists in anterior skin-flap, and posterior semicircular incision. This method is always used unless suppuration or severe crushing of the soft parts prevents it. The periosteum is incised circularly, and the bone freed from periosteum for about 6 to 10 mm. from the line where it is sawed off. The marrow is scooped out with a curette for 0.5 to 1 cm. After this the treatment is the same as in any amputation, several centimeters of the nerve being extirpated to avoid neuromata.

The author gives accounts with tabulated results

and röntgen sketches of a large number of cases operated upon at von Eiselsberg's clinic by various methods to show the superiority of Bunge's.

A. Goss.

Ehrenfried, A.: Multiple Cartilaginous Exostoses—Hereditary Deforming Chondrodysplasia. *J. Am. M. Ass.*, 1915, lxiv, 1642.

Ehrenfried had a case which he was able to diagnose as a little known disease, commonly called multiple cartilaginous exostoses. He found X-rays of several other cases at the Boston Children's Hospital, and on the basis of this material he hopes later to make a complete report. Various confusing names are used, the above by Virchow and Astley Cooper. Others are: hereditary multiple exostoses, multiple cancellous exostoses, ossified diathesis, rachitiform enchondrosis. Kienböck called it chondral dysplasia, to designate its pathology. Boggs, of Johns Hopkins, writing of a case in 1913, called it multiple congenital osteochondromata. The first is not clinically descriptive; the second is too suggestive of tumor or neoplasm.

The disease is a clinical entity. Its chief characteristics are: The occurrence of multiple symmetrical cartilaginous and osteocartilaginous growths within or on the skeleton, generally benign, and resulting from disturbance in proliferation and ossification of bone cartilage; secondary deformities occur and inheritance is shown in most of the cases; therefore, the author gives it the name hereditary deforming chondrodysplasia. The disease is probably universal, and although unusual, is far more frequent than supposed; 300 articles report 600 cases: 60 per cent Germans, 27 per cent French, 8 per cent English, and other nationalities 5 per cent. Twelve cases have been reported in America by 6 authors, 4 by Gibney 40 years ago, in a family of German immigrants. The cases in this country are more frequent than the figures show, Ehrenfried having been shown 4 cases recently by other men. Seventy to 75 per cent of it occurs in males. Most cases are hereditary: an unaffected mother of an affected father transmits it, but the father must have the disease himself to transmit it; affected mothers also pass it on. Theories on pathology, written before the day of X-rays, call attention to the unimportant exostosis, rather than to the disturbance in the proliferation and ossification at the epiphyseal line. Membranous bones of the skull are skipped.

The author has a specimen from across the epiphyseal line in a young patient, which he thinks is the only one on record. A complete microscopical examination was made and reported. Deformities occur: namely, short stature, generally from lack of growth in the legs, and the arms are short. The ulna grows less rapidly than the radius, which dislocates backward at its upper end, and is wrongly called a congenital dislocation. Not only the limbs, but the scapulæ and pelvis are distorted. Scoliosis occurs. Exostoses of any bone may appear at

almost any place. The cause is thought to be an inheritance of a faulty anlage for bone producing intermediary cartilage. There are few symptoms except those resulting from deformities. The most frequent is the growing of malignant osteocartilaginous tumors, 38 of which have been reported. This takes place between the ages of 11 and 59. Increase in an exostosis after cessation of skeletal growth should be promptly and thoroughly removed. Other treatment is confined to what the deformities may demand. C. A. STONE.

Corner, E. M.: The Changes of the Position of the Foot During Life and the Callosities on the Sole Associated with Them. *Clin. J.*, 1915, xlv, 153.

A foot, like a man, has a life history and normally undergoes changes according to the age, station, and occupation of the owner. These changes are natural and must not be mistaken for those which are unnatural and abnormal. A patient's statements as to the history and the symptoms from which he suffers may be unreliable, but the tales written in the callosities of the sole of the foot can be seen and are not likely to lie.

The first chapter in the life history of the foot is easily recognized: a flat foot with large, broad, uncalloused sole exhibiting variations in degree of abduction according to the special circumstances of the child. As the child becomes more active it begins to adduct the foot into the active position, the toes may turn in and the arch of the instep is raised. At the same time callosities begin to develop on the inner side of the heel and under the big toe. Having become adducted, the foot remains so for some years; but as the child grows, increasing in weight, strength, and in the length of time it stands, abduction gradually occurs again. This is seen earlier in girls than in boys. R. O. RITTER.

Jansen, M.: Swelling of the Foot and Its Causes (Die Fussgeschwulst und ihre Ursache). *Ztschr. f. orthop. Chir.*, 1915, xxxv, 8.

According to official statistics about 2.5 per cent of the German army develop swelling of the metatarsal region while on the march. The percentage is probably as great in other modern armies, and the affection is by no means unknown in civil life. Of Jansen's 60 cases, 40 were in the army and 20 in civil life, among people who are obliged to stand or walk a great deal. The three cardinal symptoms are swelling of the soft parts of the foot, changes in the periosteum, and cramp of the interossei.

The various theories as to the cause of the condition are discussed, and Jansen comes to the conclusion that the primary symptom is spasm of the interossei, which causes all the others. Insufficiency of these muscles leads to spasm, which stops up the interosseous spaces and interferes with circulation in the metatarsal region; the increased tension of the fluid leads to swelling of the soft parts and hydrops of the periosteum; the swelling of the soft parts

subsides readily but that of the periosteum persists, causing subperiosteal hæmorrhage and irregular thickening of the periosteum. Traction of the muscles on the periosteum in this condition causes pain. The bones themselves do not swell, but as undue pressure and traction is exerted on them they frequently fracture. These fractures which were formerly regarded as the cause of the condition are thus seen to be the result of it. Prophylaxis consists in strengthening the interossei, which is accomplished by walking, or preferably running, on the toes.

After swelling has developed rest of the muscles is indicated. If rest in bed is impossible, a plaster cast enveloping the calf and foot to the tips of the toes is applied. Hot packs and hot foot baths relieve pain. Massage if not performed very gently is apt to keep up the cramp of the interossei. After recovery a good flat-foot plate tends to prevent recurrence. A. Goss.

Lamy, L.: Treatment of Congenital Club-Foot by Subcutaneous Excochleation (Behandlung des angeborenen Klumpfusses durch subkutane Excochleation). *Verhandl. d. deutsch. orthop. Gesellsch.*, 1915, xxxv, 479.

Lamy's method consists simply in perforating the soft parts with a perforator and then curetting out first the astragalus, then the calcaneus, and then the cuboid. After they have been thoroughly curetted the position of the foot is corrected manually and a plaster cast applied in the overcorrected position. The cast is left on for three weeks, as in other methods. No suture is necessary and no ligation; the Achilles tendon may be cut if necessary.

It is preferable to operate at the age of 8 to 10 months before the children have learned to walk, but the operation may be successfully performed up to eight or nine years of age. The operation is simple and easy and as there is no skin incision or suture, there is no danger of infection. Both functional and anatomical results are excellent; the foot is not shortened as it is by tarsectomy; its form is perfectly normal and there is no scar, so that it is not evident that any operation has been performed. A. Goss.

Mason, G. M.: The Recognition of Rational Treatment in the Care of Weak and Flat Feet. *N. Eng. M. Gaz.*, 1915, l, 302.

After discussing the arches and the degrees of motion of a normal foot, Mason describes the characteristic appearance and discusses the etiological factors in the production of flat-foot.

Some of the etiological factors producing weak and flat feet are improper habits of standing and walking, occupation, improper shoes, overweight, trauma, loss of muscle tone due to sickness or other causes, and infection.

In describing the signs and symptoms of weak and flat feet he particularly calls attention to the pain which may be almost anywhere in the foot, but the most common location is over the astragalo-

navicular joint. Disability is another symptom always observed.

The deformity may be simply that of abduction or abduction with pronation, hallus valgus, hallus rigidus, rigid valgus, contracted toes, and spurs on the os calcis.

In the treatment of weak or flat feet he does not look with favor on the common methods of treatment; viz., strapping, baking, massage, exercises

and surgical relief of deformities. He has found that after a year or two there is usually a recurrence, often with deformity. The treatment which he particularly advocates is the application of the Whitman brace.

A plaster impression of the foot is taken and a metal support made, which supports the longitudinal arch and adducts the foot so as to overcome the lateral deformity.

J. H. SHAW.

SURGERY OF THE SPINAL COLUMN AND CORD

Schlesinger, A.: Attempts at Anæsthetizing the Lumbar Plexus (Über Versuche den Plexus lumbalis zu anästhesieren). *Zentralbl. f. Chir.*, 1915, xlii, 385.

Schlesinger has performed experiments on the cadaver that show that there is a point where all the fibers of the lumbar plexus may be reached and anæsthetized. Between the fifth lumbar and first sacral vertebræ there is a point where a cord made up of fibers from the first four lumbar nerves runs very close to the fifth. An injection made here anæsthetizes the whole plexus. The transverse process of the sacral vertebra, which can be palpated in most individuals, serves as a guide for making the injection. The needle should be inserted just above it and 4 or 5 cm. from the median line. He was prevented by the outbreak of the war from giving the method a thorough clinical test, but from the results of 5 experiments with 1 and 2 per cent novocaine solution he is favorably impressed with it, and recommends it for further trial. He calls it paralumbar anæsthesia. He expects to experiment further with the procedure.

A. Goss.

Taylor, R. T.: Recent Experiences in Spinal Surgery. *South. M. J.*, 1915, viii, 517.

Taylor's paper deals with the subject of (1) spinal fracture-dislocation, (2) sacro-iliac strain or dislocation, and (3) plastic surgery in Pott's disease.

Early operation for relief of spinal cord compression and paralysis is recommended. However, a case of long standing is reported recovering after proper operative interference and after-treatment.

A case of sacro-iliac strain following a fall in 1904 was treated surgically in 1913. The transversectomy was done on the left side of the fifth lumbar vertebræ and a process as wide as two fingers and as long was cut away, and at its extreme end was found ankylosed to the ilium. The operation resulted in loss of pain and restoration of mobility.

Short descriptions of the technique of the Albee and Hibbs operations are given. They are recommended to shorten the course of the disease, but the operations should be followed by proper recumbency, hygiene, and braces. The Hibbs method is believed to yield possibly better results and is a simpler operation.

H. B. THOMAS.

SURGERY OF THE NERVOUS SYSTEM

Stoffel, A.: Nature and Treatment of Sciatica (Weitere Studien über das Wesen und die Behandlung der Ischias). *Verhandl. d. deutsch. orthop. Gesellsch.*, 1915, xxxv, 64.

The term sciatica has been used much too generally to apply to almost any pain in the region of the hip, buttock, and back part of the leg. The location and character of the pain should be much more carefully studied, in connection with a more accurate anatomical knowledge of the nerves of the region involved. Many cases of so-called sciatica are neuralgias of the nerve cutaneus suræ lateralis or nerve cutaneus suræ medialis. The former nerve is not a branch of the nerve peronæus communis, as given in most textbooks of anatomy, but an independent nerve; the latter is also an independent nerve, not a branch of the tibial.

Among 38 cases of sciatica examined, 18 were pure neuralgias of the nerve cutaneus suræ lateralis, 9

of both the nerve cutaneus suræ lateralis and medialis, and 3 of the nerve cutaneus suræ medialis alone.

A good plan to locate the pain accurately is to give the patient a colored pencil and have him mark the points or lines of severest pain. A comparison of these lines with a good anatomical diagram will show what nerve or nerves are involved. Illustrations are given.

If injection treatment is given, great care should be taken to inject the nerve involved and that part of it which is affected. The failure of many cases of injection treatment is due to the fact that the sciatic was injected when the nerve cutaneus suræ lateralis or medialis was involved. Stretching of the sciatic nerve is an illogical operation. If one of the above-mentioned nerves is affected it can easily be reached in the popliteal space and an extensive segment resected.

A. Goss.

SURGERY OF THE SKIN, FASCIA, AND APPENDAGES

Morestin, H.: Gradual Reduction of Skin Lesions (La réduction graduelle des difformités tégumentaires). *Bull. et mém. Soc. de chir. de Par.*, 1915, xli, 1233.

The classical methods of autoplasty are often difficult or impossible to apply in extensive lesions, especially of the face, for instance in large nævi. Morestin suggests instead a series of slight operations, removing a small part of the nævus each time and allowing time between the various operations for healthy skin to fill in the gap. The suppleness and elasticity of the skin enable it to accommodate itself to such small losses, where a larger defect could not be filled in without malformation and the formation of scar tissue.

He gives the histories of two cases with photographs showing the remarkable change in appearance after the series of operations had been performed. The first was in a young man of 21 with a large nævus of the face. It was so large that several surgeons had refused to attempt to remove it. A small arched incision 2 or 3 cm. long was made and the nævus dissected up along it. Then another was made connecting the two ends of the first. The part of the nævus contained within the incisions was removed, and the edges very carefully united, so as to avoid traction. At intervals of from ten days to two weeks 9 other operations were performed; though there was a small extent of nævus left,

the patient expressed himself satisfied with the result.

The other case was in a child a year old who had an enormous and extremely disfiguring nævus covering practically the whole side of the face. A series of 11 operations were performed, great care being taken each time to make the incisions in such a way that there should be no traction that would produce deformity of the eye, nose, or mouth. After these 11 operations only a small surface was left, and an autoplasmic operation was performed, using skin from the forehead. No sign of the original lesion is left, nor is there any vicious position of the eyelids, nares, or lips.

The individual operations are very simple. In the child they did not last more than five minutes and she was able to go home the same day. They may be performed in adults under local anæsthesia and in infants under very light and short general anæsthesia. Of course the method is tedious and demands great patience on the part of both surgeon and patient, but the progressive improvement in appearance after each operation more than compensates for the time spent. The method may be used not only in nævi, but in plexiform neuromata, some cases of circumscribed sclerodermia, and in extensive scars, after burns for instance. Morestin is now finding great use for it in treating scars following war injuries.

A. Goss.

MISCELLANEOUS

CLINICAL ENTITIES — TUMORS, ULCERS, ABSCESSSES, ETC.

Bainbridge, W. S.: Plastic Surgery; Corrective and Palliative Repair in the Treatment of Malignant Disease. *N. Y. M. J.*, 1915, ci, 869.

Anaplastic surgery, as applicable to cancer, may be considered under two subdivisions: (1) corrective or restorative repair; (2) palliative repair.

The conditions to which corrective or restorative repair is applicable may be classed as:

1. Precancerous conditions, or conditions which in accordance with the irritation theory of the cause of the cancer may be presumptive forerunners of malignancy.

2. Removable cancer, or cases of cancer in which all macroscopic evidence of the disease is amenable to surgical removal, but in which physical defects resulting from the disease or from its removal are to be repaired.

It is possible, many times, to clear up and repair the external ravages of the disease so that the patient dies without knowing that the cancer has recurred or has extended to internal organs.

Eleven cases are reported, each of which is shown by photographs. In one case tissue from a cadaver was utilized. It is well to note in connection with the use of tissue from the dead, that extreme care must be exercised in the selection of the subject in order to obviate the possibility of the transmission of disease from the dead to the living. It is understood that autoplasmic flaps, either of skin or deeper tissues, "take" better than others.

EDWARD L. CORNELL.

Bazy, M.: Statistical Remarks on Tetanus. *Med. Press & Circ.*, 1915, xcix, 314.

The author reviewed all the cases of tetanus occurring in the entrenched camp around Paris. Of 10,396 wounded, 129 developed tetanus, 90 cases of which proved fatal. The disease developed in from two to twenty-seven days following the wound. It was particularly frequent in certain districts. The preventive action of the serum was strikingly illustrated by comparing statistics from hospitals where the serum was given to all cases with those where the serum was given only in suspicious cases. The mortality was three times as great in the latter

as in the former. The usual amount of serum injected was 10 per cent. The suggestion is made that one-fifth that amount would probably be effective.
J. H. SKILES.

Meltzer, S. J.: The Use of Magnesium Sulphate in the Treatment of Tetanus. *Lancet*, Lond., 1915, clxxxviii, 1330.

Having in mind the prevalence of tetanus during the present war, Meltzer summarizes the experiences accumulated from clinical and experimental use of magnesium sulphate during the nine years it had been tried in the treatment of tetanus.

The standard 25 per cent solution may be administered by one of four routes: subcutaneous, intramuscular, intravenous, and intraspinal.

By the subcutaneous route 2 ccm. of the 25 per cent solution per kilogram of body weight should be injected once in 24 hours. Morphine and light ether anæsthesia are of material assistance in diminishing the spasms when this method is employed. By the intramuscular route the dose is the same, and here also ether is of assistance. Intravenously, a 3 per cent isotonic solution should be used at the rate of 5 ccm. per minute. The intraspinal dose is 1 ccm. of the 25 per cent solution per kilogram of body weight. The effect of injection by the intraspinal route is not quite so prompt as with the intravenous administration, but is much more lasting, continuing from 12 to 30 hours.

The action of the magnesium sulphate intravenously injected is directly on the hyperirritable parts of the central nervous system, while by the other routes the action is through the circulation, and larger doses are required. Intravenously, there may be a rapid profound effect on respiration, which may be corrected by the intramuscular injection of 1.5 mg. of physostigmine or 30 or 40 mg. of a 2 per cent solution of calcium chloride. If untoward effects follow the intraspinal injection, the needle may be re-inserted, the spinal fluid withdrawn, and the canal washed out with normal salt or Ringer's solution. Should respiratory symptoms become alarming resort may be had to Meltzer's apparatus for artificial respiration.
URBAN MAES.

Dreyfus, G. L.: and Unger, W.: The Combined Antitoxin and Narcotic Treatment of Tetanus (Die kombinierte Antitoxinüberschwemmungs und Narkosetherapie des Tetanus. *München. med. Wchschr.*, 1914, No. 51.

Immediately upon the beginning of the disease, 400 to 600 antitoxin units are given intraspinally, intravenously, and interneurally, and in severe cases 200 to 500 units are given daily until 3,800 units have been given. Unpleasant side reactions occasionally occur, such as rise of temperature, anaphylactic shock, diarrhoea, vomiting, and serum rash. Narcotics such as morphine, chloral hydrate, luminal, and magnesium sulphate (interspinally and intramuscularly) are employed. Of 32 patients so treated, 22 recovered, but of those recovered 15

had an incubation period of two to twenty-four days and only 6 a period of six to nine days. Of the 15 with the short period, (six to nine days), 9 died in spite of the treatment. L. A. JUHNKE.

Mortimer, J. D.: Should Vasoconstrictors (Adrenalin, Pituitrin) Be Used in Emergencies, Especially in Surgical Shock? *Practitioner*, Lond., 1915, xciv, 867.

One effect of adrenalin when injected intravenously is to constrict arteries and arterioles, chiefly abdominal, so that the outflow of blood to the limbs, the coronary arteries, and the brain may be increased. It causes acceleration and augmentation of the heart action which, however, is soon masked by the reflex inhibitory action of the vagus, causing a secondary slowing or even temporary arrest. In abnormal conditions of pain, fright, or stimulation of the peripheral nerves an excess of adrenalin is quickly poured into the blood. It is this excess of adrenalin which the author shows to be disadvantageous to the patient and which is, in fact, a contributing factor to the clinical picture known as "shock."

Pituitary extract causes contraction of involuntary muscles, including that of the coronary arteries; thus arterial blood-pressure is raised. The heart action is slowed and its beat augmented. These effects, though prolonged, do not follow excessive or repeated doses.

By a careful analysis of the factors which the organism has at its command to raise blood-pressure, and by controverting the assumption that the outpouring of adrenalin following peripheral nerve stimulation is a "protective reaction of the organism" which should be assisted artificially, the author reaches a negative answer to the question asked in the above title.

In shock not accompanied by hæmorrhage he advises the use of vasodilators, with the customary application of heat. His object is to lessen the resistance to the contractions of the heart. In hæmorrhage, with or without shock, he admits that vasoconstrictors are conceivably beneficial, but considers the action of adrenalin or pituitrin too uncertain and too difficult to regulate for their use to be other than hazardous. He advises the use of saline infusion, raising the limbs, lowering the head, and using pressure on the abdomen. He believes that benefits which have been observed to follow the injection of vasoconstrictors in saline solution should be credited to the vehicle and not to the drug.
E. FISCHEL.

SERA, VACCINES, AND FERMENTS

Falls, F. H.: The Present Status of the Abderhalden Test. *J. Am. M. Ass.*, 1915, lxiv, 1898.

The author believes that the claims of Abderhalden as to the specificity of the ferments in the blood of pregnant women have not been proven. He cites the fact that Abderhalden has modified

his technique in some respects since his early published reports, although he claimed to make no mistake with his former technique. The fact that Abderhalden limits the period of dialysis to 20 to 24 hours is practically an admission that he obtains positive reactions in non-pregnant individuals when a longer dialysis period is used.

The most recent work in this country as well as abroad supports the view previously advanced by the author and others that the specificity of the ferments cannot be demonstrated by the Abderhalden method, but that the ferment content of the blood serum is undoubtedly increased in pregnancy. This work is further supported by other men working with the antitrypsin method of ferment determination.

The author feels that the Abderhalden test should be given its place along with other biological reactions and its value as a diagnostic measure determined by the slow accumulation of facts by careful workers in scientific laboratories. Its right to endure must depend upon their verdict. His conclusions follow:

1. The Abderhalden test is not a specific and infallible test for the diagnosis of pregnancy, carcinoma, or any other condition.

2. A negative reaction in a given case is of great value as speaking against the possibility of pregnancy.

3. A positive reaction must be interpreted as speaking for the diagnosis of pregnancy only, and that only in the absence of a large number of pathological conditions to some of which the author has already called attention.

4. The ferments are increased in the blood during pregnancy. As yet, no way has been devised of differentiating between these ferments and the ferments mobilized in many pathological conditions.

5. The test should be applied in all cases in which the diagnosis of pregnancy is in doubt, with a full knowledge of its limitations and possible error. It should be regarded as corroborative evidence together with other clinical phenomena.

Wissing, O.: Meiostagmin Reaction with Warmed Sera (Meiostagminreaktionen med uopvarmede Sera). *Hosp.-Tid.*, Kjøbenhavn., 1915, lviii, 565.

Wissing used Ascoli's technique for the meiostagmin reaction in 115 cases. He obtained a positive reaction in many kinds of cases, including febrile cases, nearly all the pregnant women in the latter half of pregnancy, in heart-disease with failing compensation, in cirrhosis of the liver and severe jaundice, in severe but afebrile pulmonary tuberculosis, and in a few cases of severe diabetes, chronic nephritis with uræmia, and chronic rheumatism. However there is little danger of any of the diseases in this list being confused with cancer with the possible exception of icterus gravis. The reaction was positive in 82 per cent of the 40 cancer cases, so that the reaction is of value in the differ-

ential diagnosis of cancer, even though it is by no means specific. Moreover the reaction was negative in most of the conditions that might be mistaken for cancer, including gastric ulcer, chronic gastro-intestinal irritation, afebrile surgical tuberculosis, chronic gynecological diseases, and syphilis. Wissing found that the results were much clearer when the serum had not been warmed. A. Goss.

Lunkenbein: Treatment of Malignant Tumors with Tumor Extract (Zur Tumorextrakt-Behandlung maligner Geschwülste). *Beitr. z. klin. Chir.*, 1915, xcv, 626.

Lunkenbein describes in detail the preparation of his tumor extract. An injection of the tumor extract, carcinoma for carcinoma, sarcoma for sarcoma, enables the body to form specific ferments which can attack the tumor-cells. The specificity of a tumor seems to reside in the nucleus of the tumor-cells. So long as this nucleus is not accessible to the body fluids on account of its envelope of protoplasm, the body can form no specific ferments against it; but the extract contains albumin from cancer-cell nuclei, causing the body to produce abundant specific ferments against it, so that the living tumor-cells are finally attacked.

The treatment depends on various factors, including the capacity of the body for reaction, the size and kind of the tumor, the preparation of the extract, and its content in specific antigens. The administration of the extract may be advantageously combined with surgical treatment or radiotherapy.

Poor results are obtained in cases in which there is severe cachexia, in patients in whom the hæmoglobin content is less than 40 per cent, and in cases in which there are metastases in the liver, spleen, brain, and spinal cord. The favorable cases are those of so-called soft carcinoma, also carcinoma of the skin, tongue, œsophagus, gastro-intestinal tract, and uterus. The results vary in carcinoma of the breast; they are doubtful if there are extensive metastases. Sarcomata react more favorably than carcinomata if they are not too large and cachexia is not too far advanced.

The injection causes a reaction varying in degree according to the state of the general health. It is best to begin with small doses of about 1 ccm. and if there is no reaction the doses are doubled and given every two days till a satisfactory reaction is obtained. After this the dose should be increased cautiously. After a weak reaction there should be an interval of 3 or 4 days, after a moderate one 5 to 6 days, and after a strong reaction 7 to 8 days. It is not well to allow longer intervals, for the effect of the extract is less after a long interval. The better the patient's general condition the stronger the reaction that can be produced without injury. The treatment will have to be continued for a long time and the patient should be warned of this beforehand.

In the discussion KREUTER reported 15 cases: 12 of carcinoma, and 3 of sarcoma treated with the



Fig. 1. Tube in donor's vein, and blood flowing into the tube.



Fig. 2. Tube in position, the bulb attached, and the blood being slowly forced into the vein of the recipient.

extract. The reaction was so severe that the patients' lives were threatened, and there were practically no results, except slight local improvement in some cases. He advises against the continued use of the extract.

BURKHARDT used the extract in 11 cases. Some of the patients had such a strong reaction that they refused further treatment. In most of the cases there was no result from the treatment. In 2 of the cases the tumors grew smaller at first, but after 4 or 5 injections they began to grow again.

MADLENER gave 60 injections in 14 cases; the treatments were only begun three to five weeks ago, and in that time there has been no decrease in the tumors, but the subjective improvement has been so encouraging that he thinks the treatment should be continued.

STÄDTLER, VON ANGERER, and ENDERLEN also reported rather discouraging results, consisting partly in very severe reactions and partly failure to influence the tumors.

A. Goss.

BLOOD

Mason, J. M.: The Simplicity of Blood Transfusion by Means of the Kimpton-Brown Tube. *Surg., Gynec. & Obst.*, 1915, xx, 737.

Mason considers the Kimpton-Brown tube the simplest method so far devised for transfusion.

The special instruments required are the Kimpton-Brown tube—two sizes, 100 and 250 ccm., respectively—and a cautery bulb.

Other necessary instruments are such knives, scissors, dissecting and artery forceps, needles, and sutures as may be needed to expose the veins of the donor and recipient, together with a cataract knife

for opening the veins, and a hypodermic syringe for the local anæsthetic to be used at the site of the skin incisions.

The safety and success of the operation depend upon the proper coating of the interior of the tube with paraffin or Vincent's mixture (paraffin 2 parts, vaseline 2 parts, stearin 1 part). The coating is accomplished by placing in the tube about one cubic inch of the mixture, and sterilizing the tube in the autoclave. Upon removing the tube from the autoclave, it is wrapped in a sterile towel, protected from breaking by further wrapping in cotton, and is set aside until needed. When ready for use, the paraffin, or Vincent's mixture, will be found to have solidified in the bottom of the tube. Under aseptic precautions, the tube is slowly rotated over an alcohol lamp or a gas flame until the paraffin has melted, when by further rotation, it will spread over the entire inner surface of the tube and the excess may be allowed to run out. The thin layer of paraffin quickly hardens and the tube is ready for use.

Under local anæsthesia, a vein at the bend of the elbow of the donor is freed for a distance of one and one-half inches, a ligature is thrown around the vein and tied on the proximal side. A vein in the arm of the recipient is treated in the same manner, except that it is tied distally.

Traction is made on the ligature around the vein of the donor, thereby elevating the vein, which is opened longitudinally with the cataract knife. The edges of the incision are held apart by the assistant with mosquito forceps, small tissue forceps or fine hooks, and the tip of the tube, directed peripherally, is inserted into the lumen of the vein.

The donor is directed to open and close the hand

slowly, and this pumping effect causes the tube to fill very quickly. A ligature around the arm above the incision will increase the rapidity of the flow, but its use is not absolutely necessary.

The vein of the recipient is opened and the tip of the tube inserted, directed centrally. The cautery bulb, previously sterilized, is attached to the side tube, and very slight pressure is exerted. The blood flows into the vein of the recipient at a rate that is always under the control of the operator. If more blood is desired, the operation is repeated with a fresh tube; otherwise nothing remains to be done except to close the small wound made in exposing the veins.

One great advantage of the method is that donor and recipient do not have to be brought in contact with each other, as in the anastomosis methods. Indeed it is not necessary that they be closely approximated or even in the same room. This feature makes it available under conditions where direct or indirect anastomosis might be impossible.

BLOOD AND LYMPH VESSELS

Quénu: **Traumatic Aneurisms** (À propos de dix-huit anévrismes traumatiques opérés par Pierre Duval). *Bull. et mém. Soc. de chir. de Par.*, 1915, xli, 592.

In February Pierre Duval reported 18 cases of traumatic aneurism operated upon by him. Among them was one of arteriovenous aneurism of the common carotid and the internal jugular. Quénu reports a case of the same kind operated upon by him and collects the cases from the literature, 17 in all. He describes the methods of operation used in the various cases and concludes that the operation of choice is quadruple ligation. This method may be applied even in cases where there is perforation of the carotid at the bifurcation, when quintuple ligatures are applied; none of the cases so operated upon has been lost. The favorable results of the operations performed since 1889 justify operation, though Pluyette wrote in 1886: "Expectant treatment is a duty, and operation is to be condemned."

A. Goss.

Auvray: **Operation in Fifteen Cases of Traumatic Aneurism** (Quinze anévrismes traumatiques opérés). *Bull. et mém. Soc. de chir. de Par.*, 1915, xli, 851.

Auvray describes 15 cases of operation for aneurism, 7 of them being arterial, 7 arteriovenous, and 1 diffuse. Three of the arterial aneurisms were in the radial, 2 in the brachial, 1 in the ulnar, and 1 in the superficial temporal. Of the arteriovenous aneurisms 2 were in the axilla, 1 in the upper part of the brachial, 1 at the bend of the elbow, 1 of the superficial femoral near the apex of Scarpa's triangle, 1 in the popliteal space, and 1 in the carotid region, between the external carotid and the internal jugular. The diffuse aneurism was in the axilla. The aneurisms were extirpated in all the cases. He never sutured the lateral wall of

the vessel to preserve its continuity, because of the extent of aneurisms from gunshot wounds, though he did this successfully once in an aneurism following a stab wound of the thigh. One indispensable condition of success is to lay the aneurism bare very freely; for instance, in the axillary aneurism he made a vertical incision of the pectoralis major and in the carotid aneurism a transverse section of the sternomastoid. These extensive sections of the muscle did not produce any functional disturbances afterward.

In aneurisms of the limbs the author ligated the limb to prevent loss of blood; in other situations he ligated or clamped the vessels as near as possible to the aneurism. When it came to removing the aneurism itself he ligated the large venous and arterial trunks above and below it; this does not do away with hæmorrhage entirely, but reduces it to such an extent that it is readily controlled. Care should be taken in dissecting the sac not to injure nerve-trunks that may be very intimately adherent to it.

Only one case was lost — the diffuse aneurism of the axilla. This condition had been incorrectly diagnosed and had persisted for three weeks when the patient was admitted. The patient was in very bad condition and the walls of the artery were inflamed; gangrene followed the operation and the patient died. In another case where the nerves of the axilla were included in the walls of the aneurism there was paralysis of motion and sensation in the hand and a suppurative arthritis in the thumb. The results were excellent in all the other cases.

A. Goss.

Bier: **Surgery of the Blood-Vessels; Aneurisms** (*Chirurgie der Gefässe; Aneurysmen*). *Beitr. z. klin. Chir.*, 1915, xcvi, 556.

At the meeting of military surgeons held in Brussels this spring Bier reported on 102 cases of operation for aneurism. The aneurisms were of very recent date and the sacs were filled with old or fresh blood-clots. Aneurisms were observed in almost all the large and medium-sized arteries; 45 of them were arterial and 56 arteriovenous. Momburg's tube was used to control hæmorrhage in aneurisms of the femoral or pelvic vessels.

The best treatment is suture of the artery; it was performed in 74 cases; in most of the cases the suture was along the axis of the vessel; in only 3 cases was transverse suture performed. In arterial aneurism lateral suture is a simple operation.

Operation for arteriovenous aneurism is more difficult. In 36 cases the wounded piece of artery was resected and the ends sutured circularly. Transplantation of a piece of vein to fill in the gap was not found necessary. Circular suture is easily performed, even on the larger arteries; intima is applied to intima and a continuous suture inserted. Small arteries are ligated. Where large veins run through infected aneurisms they are ligated in two places and resected.

Suture of the vessels should not be attempted in infected aneurisms. It has often been asserted that ligation of arteries is not dangerous in healthy young soldiers, but Bier finds that this is not always true. He has seen several cases where ligation of large arteries caused gangrene, and he himself ligated the subclavian in a case where he thought suture was contra-indicated; gangrene of the arm followed resulting in death. Many aneurisms recovered spontaneously. There was death in 8 of his operated cases, 4 of the fatal cases being aneurisms of the subclavian. All the others recovered. A. Goss.

Secher, K.: Treatment of Varices of the Lower Extremity by the Kuzmik-Schede Method (Behandlung von Varicen an den unteren Extremitäten der Methode von Kuzmik-Schede). *Berl. klin. Wchnschr.*, 1915, lii, 608.

Kuzmik's method consists in tying a heavy silk thread around the vessel over a roll of gauze. The thread is drawn very tightly and the ligation is repeated at intervals of about 2 cm. along the course of the varicose vein. Kuzmik used it in 155 cases with only three recurrences. Frequent recurrence is the objection to the Trendelenburg method.

Secher gives the histories of 4 cases in which he used the method, 3 of them bilateral. He had excellent results in all cases, and no recurrence. It is a simple and easy treatment and can be carried out in the office or in the patient's home. The threads are removed the twelfth day and the dressings changed. The intima and media are separated by the ligature and their growing together again obliterates the vessel. The first few days after the operation there is much pain and a feeling of numbness in the legs; it is advisable to give morphine to allay the pain. Walking is somewhat difficult for a few days, but soon becomes easier. There is no disturbance of sensation. A. Goss.

Kondoléon, E.: Ultimate Results of the Surgical Treatment of the Lymphoedema of Elephantiasis (Die Dauerresultate der chirurgischen Behandlung der elefantiasischen Lymphödeme). *München. med. Wchnschr.*, 1915, lxii, 541.

In a former article the author proposed excision of the deep fascia in the treatment of the chronic lymphoedema of elephantiasis, but at that time his cases were too recent to show the ultimate value of the treatment. All the other cases in the literature have also been reported shortly after operation. He now gives the histories of 10 cases operated on from March, 1912, to November, 1914. Two of them were completely cured, 3 were markedly and permanently improved, 2 showed slight improvement, 2 have not been heard from, and 1 relapsed to almost the original condition.

In the cases with abundant proliferation of connective tissue and advanced sclerosis the improvement was slight, in those of simple lymphatic stasis there was recovery or marked improvement.

While the results are not so brilliant as they appear immediately after operation, still they are very satisfactory, when it is considered that there is no other method of overcoming the condition. The operation will give much better results if performed early before sclerosis of the connective tissue takes place. A. Goss.

POISONS

Willimczik, M.: Typhoid Abscesses (Über Typusabscesse). *Berl. klin. Wchnschr.*, 1915, lii, 459.

In an extremely large percentage of the typhoid cases occurring during the war there have been skin abscesses. Many of these were abscesses containing the ordinary pus cocci and due to external infection. But another group of cases, three of which are described, were specific subcutaneous abscesses containing typhoid bacilli. They were bland, cold abscesses with pale grayish red granulations. They are due to internal metastases, not to external infection. Typhoid is not a local infection of the intestine, but a form of sepsis with typhoid bacilli in the circulating blood, and when these reach a point of least resistance such abscesses are formed. They are more frequent in war than in peace because of the many forms of trauma to which the soldier is subjected. A. Goss.

SURGICAL THERAPEUTICS

Rossie, J.: Ortizon and Ortizon Pencils in the Treatment of Wounds (Ortizon und Ortizonstifte in der Wundbehandlung). *München. med. Wchnschr.*, 1915, lxii, 438.

Ortizon is a solid and therefore transportable form of hydrogen peroxide; it consists of hydrogen peroxide and carbamide, and is prepared in the form of pencils which are inserted into the wound. They are easy to use and more effective than the liquid, for they contain 10 times as much hydrogen peroxide as the 3 per cent solution. The oxygen is given off gradually after they are inserted into the wound. The fistula or wound cavity is gradually distended by the development of the gas, so that there is freer discharge of pus and the patient is often saved incisions. The introduction of the pencils produces a pleasant cool sensation, due to the carbamide. Recently, Weintrud has proposed to use the ortizon pencils as a prophylactic against tetanus, because the tetanus bacillus is anaerobic and the presence of oxygen would destroy it. Their use in this way has not yet been sufficiently tested. A. Goss.

Agasse-Lafont, E.: Criticism of Pyoculture (Note sur le procédé de la pyoculture). *Bull. Acad. de méd.*, Par., 1915, lxxiii, 21.

A method called pyoculture has recently been proposed by Delbet, who considers it of great value in deciding the prognosis and operative indications in cases of suppuration. It consists in collecting

pus from a wound in a pipette, planting a part of it in peptonized bouillon and leaving the remainder in the pipette; both are placed in the incubator and examined again after 24 hours. If the pyoculture is positive there is a more abundant development of bacteria in the pus than in the bouillon.

Agasse-Lafont criticizes this method severely and thinks that Delbet is not justified in operating on account of the results given by the method when the clinical indications are against operation. Neither does he think that Delbet's demonstration by this method that practically all antiseptics are injurious, is conclusive. Even if the principle of the method is correct, much remains to be desired in regard to the technique. The nature of the different bacteria and the conditions under which they thrive best are left out of account entirely. Some bacteria do not thrive in peptonized bouillon, so that a more abundant growth in the pus would prove nothing. The conditions as to oxygenation have a great deal to do with the growth of bacteria, and this is not allowed for. Growing the same kind of bacteria in closed tubes and in open Petri dishes and observing the difference in the growth will illustrate this point. The conditions under which the bacteria grow in the pipette and in the wound are so very different that comparison is hardly possible.

The bacteria that have had to be dealt with most frequently during the present war have been largely of the anaërobic type, and that has helped to bring about accordance between the clinical results and those of pyoculture. But even then, Agasse-Lafont believes that long and careful laboratory study will be necessary before we are justified in using this method to determine the indications for operation.

A. Goss.

ELECTROLOGY

Abbe, R.: Lymphangioma and Radium. *Tr. Am. Surg. Ass.*, Rochester, Minn., 1915, June.

Abbe's paper deals with the problem of the utility of radium in the surgical field and demonstrates the peculiar specific action of radium as a new force.

Up to the present time 6 types of tumor tissue have been shown to be efficiently cured, in the best surgical sense, by the unique action of radiant discharge from radium. These types are:

1. The hyperkeratoses or cornified skin growths.
2. The basal cell epitheliomata.
3. Myeloid bone tumors, in which the radium's specific action is so typically shown that in a pul-taceous bone tumor from which all ossific matter has disappeared, there appear, at first, gritty points throughout the mass soon after the use radium. These points coalesce as the tumor shrinks and ultimately form a solid bone structure taking on the shape of the original bone, so that, at last, all myeloid tumor has been changed to healthy and enduring bone of the original form.
4. Some round-cells sarcomata destructive of bone have wholly disappeared and remained well.

5. Uterine fibroids—pure myomata—have constantly been demonstrated to shrink and be absorbed after proper use of radium and to remain cured ten years.

6. In this paper the author demonstrates that certain tumors composed wholly of lymphangioma with clear fluid in the overgrown lymph-channels, or of mixed masses of capillary lymph- and blood-vessels are radically cured by the specific alteration of the masses by the action of radium. These tumors are found not uncommonly in the tongue where they sometimes grow large and troublesome, or become combined in nævoid structures, or as noted by dermatologists, they may form groups of white vesicles on the skin of children, which continue for years and are most difficult to cure. They may be all cured by radium.

Evidence is slowly accumulating that the action of radium in appropriate conditions is not only unique but specific.

It is commonly thought that the action of radium and the X-ray tube are similar and that whatever one can do, the other can. Far from it!

The output of each is spoken of in terms of electrons, or discharges of particles shot into the tissues under treatment.

From the X-ray tube γ -rays are the principal output. These are wholly neutral particles, that is, with neither positive nor negative electricity.

The radium discharge is composed of both β - and γ -rays in large quantity. The β -rays are negatively charged particles and carry this influence into the tissues.

It has been fully demonstrated that the negative β -electron discharge is the efficient factor in alteration and curative action. In this, then, radium has every advantage, as it is rich in the β -ray discharges.

How then is the X-ray tube so efficient? It has been demonstrated that the γ -ray piercing tissues generates secondary rays on meeting resistance, and thus the secondary β -rays are active wherever generated. In that respect both agents generate the same efficient force, the β -ray. The special virtue of radium lies in its primary output of these β -rays at short range, applied where contact is made with the tumor.

Knox, R., and Salmond, R. W. A.: A System of Topography for Use in Radiography of the Head. *Arch. Röntg. Ray*, 1915, xix, 393.

The authors endeavor to outline a simple method of measurement to show the relations between the surface of the head and the bony as well as the soft parts in the interior.

The method is based on a series of measurements made on the dry skull, and afterwards applied to and verified on subjects in the post-mortem room, and also as far as possible on the living subject.

The authors have found the method accurate for application to the various types of skull met with, though in exceptional yet still normal types its accuracy will be lessened.

A base line is determined by drawing a line from the midpoint of the suture between the frontal and nasal bones, through the center of the external auditory meatus, continuing to the midline at the back of the head. The length of this is measured, and on it three points are marked, at one-third, one-half, and two-thirds of the distance from either end; usually it is most convenient to measure from the front.

Through these points perpendiculars to the base line are drawn, dividing the head into four areas by three lines which run downward and forward and are intersected by the base line.

The following points are found on the same horizontal plane as the base line: (1) the lower part of the frontal sinus; (2) the sphenoidal sinus; (3) the apex of the petrous bone; (4) the clivus of the sphenoid; (5) the glenoid cavity and condyle of the lower jaw; (6) the external auditory meatus; (7) the jugular foramen; and (8) the mastoid process.

The point of intersection at one-third the distance from the nasion is at the zygomatic malar suture and corresponds in the interior with the front part of the sphenoidal sinus. The point at one-half the distance is at the glenoid fossa and condyle of the lower jaw, and corresponds in the interior with either the lower part of the dorsum sellæ or just a little behind it, the apex of the petrous bone. The point at two-thirds the distance is on the mastoid process, toward its posterior margin, and corresponds with the curved portion of the lateral sinus in the interior.

The three perpendicular lines divide the head into four regions which may be called A, B, C, D, from before backwards.

Region A contains the anterior fossa of the skull with the anterior half of the frontal lobe, the orbits and the facial bones with the exception of the ascending rami of the lower jaw and the palate bones.

Region B contains the body of the sphenoid and the greater part of the sphenoidal sinus, the sella turcica and pituitary body, the palate bones and ascending rami of the lower jaw, the posterior half of the frontal and the anterior part of the temporo-sphenoidal lobe of the brain.

Region C contains the mastoid process, petrous temporal bone, occipital condyles, anterior half of the parietal and posterior part of the temporal lobes of the cerebrum, the pons, medulla, and the anterior part of the cerebellum.

Region D contains the horizontal portion of the lateral sinus, the occipital lobe and the posterior half of the parietal lobe of the cerebrum, and the posterior part of the cerebellum.

An illustration is given of the use of the system to radiograph the sphenoidal sinus laterally. The system shows that the base line runs through the sinus, and that it is situated between the intersecting lines at the one-third and one-half distances. The tube is, therefore, arranged so that its central

rays pass through the base line and between the intersecting lines.

The paper is carefully illustrated and is valuable for reference.

DAVID R. BOWEN.

Manges, W. F.: Röntgen Ray Examination of Accessory Sinuses. *Penn. M. J.*, 1915, xviii, 508.

Manges reviews the physics and the technical history of sinus examinations, and states that it is necessary to use tubes maintaining a constant and fairly high vacuum, since the necessary exposure with soft tubes may produce alopecia. As it is impossible to distinguish shadows made by sinuses filled with water, pus, mucus, mucous membrane, or other soft tissue, the nature of the abnormal content cannot be determined. Sinuses should not be emptied previous to X-ray examination. Very much thickened mucous membrane renders a sinus more opaque than its healthy mate, but plates of the highest order are required for such detail. The knowledge as to the size of the frontal sinuses, absence of one or the other, and the presence of septa, is of the utmost value to the surgeon prior to operation.

The maxillary sinuses, frequently the seat of malignancy, of infection, of extension from alveolar abscess or involvement in dentigerous cysts, offer an even greater field for differential diagnosis.

Good röntgenograms, made in Caldwell's position, will at least show a difference between the shadows or normal ethmoids on one side and occluded cells on the other. Stereoscopic röntgenograms are still more accurate.

Although there are numerous forms of technique, Manges has seen few cases in which the röntgen diagnosis was of positive value as to the presence of fluid in these sinuses; but the study of the sphenoid cells is of the utmost importance in cases of pituitary disease.

Errors in röntgen diagnosis of sinus conditions are usually due to faulty technique. The plates must be of contrastive, strongly penetrative quality, or the shadows will be so pale as to seem airless.

DAVID R. BOWEN.

MILITARY SURGERY

Témoin: Fractures of the Skull by Tangential Shots (Fractures du crâne par lésion tangentielle de la tête). *Bull. et mèm. Soc. de Chir. de Paris*, 1915, xli, 1024.

Témoin calls attention to the frequency with which injuries of the scalp, apparently slight, are accompanied by fracture of the skull. After having had one or two sad experiences in losing patients with encephalitis when they had come in with apparently only slight scalp wounds he adopted the plan of opening up all scalp wounds freely and examining the skull. If there is the slightest fissure of the external table he trephines at once. Any clots or fragments are removed and a small drain left in the wound. Among 33 patients with

scalp wounds treated in this way, 29 were found to have fractures of the skull. All of the 23 who were trephined immediately after their arrival at the hospital recovered; of the 5 who were not operated upon until symptoms of brain disturbance developed 4 died. Therefore he is an ardent advocate of immediate operation in skull injuries.

In the discussion PAUCHET pointed out that in some cases where there is no true fracture but careful examination shows an ecchymosis of the external table of the skull, trephining will reveal the fact that there is a fracture of the internal table; therefore cases showing such ecchymoses or hæmorrhagic spots should be operated upon. TUFFIER agreed with him in this opinion. TOUSSAINT presented the histories of 10 cases of operation for fracture of the skull.

A. Goss.

Hosemann: Early Surgical Treatment of Gunshot Wounds of the Skull (Die chirurgische Frühbehandlung der Schädelgeschüsse). *Deutsche med. Wchnschr.*, 1915, xli, 607.

Hosemann had charge of a dressing station north of the Aisne for eight weeks. Injuries of the skull were extraordinarily frequent. He had 79 cases, and as there was time to give considerable care to each case they were treated at the dressing station rather than forwarding them to the hospitals. This is preferable if the conditions permit of it at all, for transportation is particularly dangerous in these cases. The hair was cut away, the wounds painted with tincture of iodine; and if necessary to get a clear view of the skull, the scalp wound was enlarged. In 24 cases this procedure showed that operation was necessary. Nine of these patients died.

There was very little infection among the cases — one case of meningitis and one of superficial brain abscess. The brain is not so sensitive to infection as is commonly believed if it is given the necessary care early. Another important point is to provide free drainage in order to avoid pressure on the brain. Dressings should be changed often so that the wound secretion may be discharged. Discharge of brain substance is not in itself especially dangerous; it is, however, an evidence of increased intracranial pressure, and indicates an examination for hæmatoma or brain abscess. The advice of some authors to close all defects in the skull by flaps of periosteum fascia, etc., is therefore based on a mistaken conception. It increases the very condition that is causing the brain prolapse. The indication in such cases is to keep the wound open, not to close it.

A. Goss.

Bárány: Primary Suture of Gunshot Wounds, Especially of the Brain (Primäre Wundnaht bei Schussverletzungen, Speziell des Gehirns). *Wien. klin. Wchnschr.*, 1915, xxviii, 525.

Bárány describes a number of cases of gunshot injury of the brain from which he draws the conclusion that it is better to suture at once without

drainage. Theoretically these wounds are to be regarded as infected, but practically they may be regarded as sterile and sutured. He believes, moreover, that in gunshot wounds in general much better results would be obtained if wounds were cleansed, the skin excised if necessary and sutured at once at the dressing station, than by the present method of simply dressing them and sending them on to the hospital. He thinks the wounded men would recover much sooner and be ready for military service again. Of course it would be necessary to simplify the procedure as much as possible. Instruments could be kept in alcohol all the time and the surgeon's hands sterilized with alcohol if water and soap were not obtainable. Excision of skin wounds could generally be accomplished under local anæsthesia or without anæsthesia at all. Practice would enable the surgeon to suture most wounds in a few minutes.

The objection is made that the patients would have to be transported and could not be under medical observation, but Bárány holds that they would not be any worse off than they are with their wounds simply bandaged. There would be even less danger of hæmorrhage and infection, for the patient is exposed to both these dangers by displacement of the dressings during transportation. If the principle were once established that gunshot wounds should be sutured immediately, means could readily be found for carrying it out.

A. Goss.

Piéry: Penetrating Injuries of the Thorax in War (Les plaies pénétrantes de poitrine par projectiles de guerre). *Presse méd.*, 1915, xxiii, 197.

Piéry was able to follow up 53 cases of injuries of the lungs in the present war. Simple wounds of the lung are characterized by a pneumonic process accompanied by hæmothorax. The stethoscopic signs are tubular breathing over the middle of the lung, with dullness at the base gradually decreasing upward. A bloody intrapleural effusion is shown by exploratory puncture. There was hæmoptysis in somewhat more than half the cases. There is moderate dyspnoea and tachycardia and a very characteristic temperature curve, caused by the pneumonic process. Resolution of the pneumonia and absorption of the bloody effusion are both slow. All of the 25 patients with uncomplicated wounds of the lung recovered.

The immediate treatment is rest in bed, revulsion, and the use of digitalis and ipecac to combat the hæmorrhagic pneumonia. Operation is contra-indicated; the hæmothorax should be left alone. Extraction of projectiles should be delayed as long as possible. Convalescence is prolonged and during this period the greatest care should be exercised, particularly to avoid catching cold. These wounds are frequently complicated by pneumothorax, secondary suppuration of the hæmothorax, primary pyothorax, fracture of the ribs, or abdominal wounds. Treatment of complications consists in evacuating pus as soon as discovered.

A. Goss.

Beaussanat: Injury of the Heart by the Bursting of a Grenade; Extraction of Projectile from the Right Ventricle; Recovery (Plaie du cœur par éclat de grenade; projectiles libres dans la cavité ventriculaire droite; extraction du projectile; guérison). *Bull. Acad. de méd., Par.*, 1915, lxxiii, 554.

Beaussanat describes a case of operation for injury of the heart which illustrates the remarkable tolerance of this organ. A sergeant was struck by a bursting grenade. A fragment was removed, and he was then discharged but for four months continued to have difficulty in breathing and precordial distress, worse at night and when lying down. He had to move gently and speak slowly to avoid making his symptoms worse. After röntgen examination a diagnosis was made of a fragment of shell in the pericardium. On incising the pericardium, however, the fragment could not be seen, but it could be felt free in the right ventricle. The heart was brought outside the pericardium and held by two silk threads passed through the muscle. The fragment was brought as near to the apex of the ventricle as possible and held by the thumb behind and three fingers in front while an incision was made through which it was extracted. It weighed 1.5 gms. The heart was sutured with silk. For three days the patient had intense dyspnoea, the pulse was feeble and irregular and the facies anxious. There were three attacks of cough and blood-stained sputum, evidently from pulmonary embolism. But in a month the patient had completely recovered and auscultation showed the heart normal.

A. Goss.

Schäfer, A.: Conservative or Operative Treatment of Heart Wounds (Beitrag zur Frage der konservativen oder operativen Behandlung von Herzwunden). *München. med. Wchnschr.*, 1915, lxii, 647.

Schäfer describes two cases in which he sutured the heart; one a case of stab wound with suicidal intent, the other an accidental gunshot injury. Both cases recovered. He concludes that operation is not only justified but unconditionally indicated in gunshot injuries of the heart if they can be operated upon within a few hours after the injury with proper aseptic precautions.

Ether is the best anæsthetic; stimulants are contra-indicated before the operation, as they increase the bleeding; after the operation they are of value combined with the administration of physiological salt solution. The intercostal incision is the best. Positive or negative pressure apparatus is not necessary; in most cases pneumothorax has already occurred from the wound, and even if produced by the operation it is not of great consequence. The author thinks drainage of the pericardium is dangerous and drainage of the pleura unnecessary. Fixation of the lung to the anterior ribs hastens the reëxpansion of the lung.

A. Goss.

Haberer, H. von: Further Experience with Aneurisms in War, with Special Reference to Suturing the Vessels (Weitere Erfahrungen über Kriegsaneurysmen, mit besonderer Berücksichtigung der Gefässnaht). *Wien. klin. Wchnschr.*, 1915, xxviii, 435, 471.

Von Haberer reported 13 cases of operation for aneurism in 1914, at which time he thought ligation of the artery with extirpation of the sac was the method of choice, and all of his cases were operated upon in that way. A little later he had occasion to suture the artery in a case of aneurism of the common carotid. Since then he has had 28 additional cases, in 16 of which he did ligation and extirpation and in 12 suture, making a total of 42 cases, 29 ligations and 13 sutures. He gives the histories of the last 28 cases, and concludes that suture is the operation of choice in all cases in which it can be performed. In many cases, however, it is impossible to suture, though with added experience he is continually extending the indications.

Five of his cases were lateral suture, once on the common carotid, twice on the subclavian, once on the axillary, and once on the tibialis anticus. The case of aneurism of the common carotid was infected, but in spite of that recovery was uneventful and restoration of circulation perfect. Of the 7 cases of circular suture 4 were of the femoral artery, 1 the brachial, and 2 the subclavian.

From his total of 42 cases he finds that the results were better with suture than with ligation. Among the 29 cases of ligation, amputation was necessary in 2, and one patient died of hæmorrhage from erosion. There was another death, but this patient was in such bad condition that death cannot be attributed to the operation. There was not the slightest complication in any of the 13 cases of vessel suture, in spite of the fact that some of them were very difficult cases. In addition to the infected case mentioned above there was one case of aneurism of the femoral complicated by fracture of the femur. The leg was placed in extension immediately after the operation, but the suture held perfectly and there was no interference with circulation in the leg. In one case of aneurism of the subclavian the sac extended far down into the thorax, and it was so difficult to get at that the operation took three hours; there was moreover a defect of 4 cm. in the artery. Considering all these facts the results were surprising. The author has tried transplantation of a piece of vein in only one case, in which it was unsuccessful. A. Goss.

Longard, C.: Late Hæmorrhage After Gunshot Wounds (Spätblutungen nach Schussverletzungen). *Deutsche med. Wchnschr.*, 1915, xli, 529.

With the old soft lead bullets the injuries of blood-vessels were generally contusions, but with the modern infantry bullets they resemble incised wounds more, and more cases bleed to death on the battlefield. Nevertheless there are many cases in

which the shot grazes the vessel, destroying only a part of the wall. The intact part of the wall then bulges under the pressure of the blood, forming an aneurism. Seven or eight days later the injured wall may rupture with severe hæmorrhage. The blood collects under the soft tissues, forming a swelling that may be mistaken for an abscess. Such supposed abscesses have often been opened with serious consequences. When bleeding of this kind occurs it is necessary to lay open the wound and either ligate or suture the wounded artery. Longard has ligated the artery in 32 cases, details of 3 of which are given. A. Goss.

Boit, H.: Injuries of the Stomach and Intestine by Infantry Bullets (Über Verletzungen von Magen und Darm durch das Infanteriegeschoss). *Deutsche med. Wchnschr.*, 1915, xli, 707.

Among the intestinal injuries observed by Boit there was a mortality of 84 per cent, while the mortality in the stomach cases was only 15.3 per cent. The low mortality in the stomach cases was due to the fact that the stomach was empty in most cases. The prognosis is much better if the injury is in the region of the cardia or lesser curvature than if it is in the pyloric region. The prognosis is so good that the treatment should be strictly conservative. The question of the advisability of operation in injuries of the intestine is still unsettled.

Boit recommends more numerous and careful autopsies, for in this way it is possible to determine whether operation would have saved the life. In two-thirds of the cases that have had necropsies performed the findings indicate that operation would have been effective if it could have been performed within the first twelve hours. If the patients could be brought to the field hospital within that time and operated upon many of them might be saved. The trouble is that even when they are brought to the hospital they are often neglected for other cases in which there is more hope of success.

Boit suggests that separate hospitals should be established for the care of abdominal injuries, and patients transported to them as rapidly as possible in automobiles. A patient on whom an abdominal operation has been performed should never be moved in less than two weeks. Even if it is necessary to evacuate the position they should be left behind in the care of hospital assistants. A. Goss.

Basdékis, S.: Stab and Gunshot Injuries of the Abdomen (Über Stich- und Schussverletzungen des Bauches). *Beitr. z. klin. Chir.*, 1915, xcvi, 223.

Basdékis reports 63 cases of abdominal injury treated at the Freiburg Clinic, some of them injuries in civil life, others from the Balkan War; they include stab and gunshot wounds, penetrating and non-penetrating, and with and without perforation of the intestines and other abdominal viscera. Typical cases in the different groups are described in detail.

The possibility of spontaneous recovery, the difficulty of operation under the proper conditions

in war, and the severity of the operation itself have caused many authors to treat abdominal wounds expectantly, even in civil life. Among the most ardent advocates of this treatment are Reclus, Berger, and Stimson. There are others who advocate operation in all cases.

The statistics brought forth by different authorities vary greatly. Reclus had only 18 per cent mortality in 114 revolver injuries treated expectantly, while others with the same treatment have a mortality of 70 per cent or more. Siegel collected several series of statistics and found that the mortality with operative and expectant treatment was about the same — 55 and 51 per cent. But on working out the mortality of 376 operative cases he found that the mortality of the cases operated upon during the first four hours was 15.2 per cent, after five to eight hours 44.4 per cent, after 9 to 12 hours 63.6 per cent, and for all later laparotomies 70 per cent. Therefore the consensus of opinion in Germany today is that the earlier operation is performed the better the prognosis. But the prognosis in the individual case is and always will be doubtful.

Most surgeons agree with Madelung that the danger in penetrating injuries of the abdomen is over 24 hours after the injury.

Küttner and others hold that all patients with abdominal injuries operated upon on the field die, while Eilert, Perthes, and others demand operation within 12 hours. Von Oettingen advises that the following classes of cases be operated upon on the field: (1) extensive injuries of the abdominal wall, where it is probable that the intestines also are injured; (2) large openings of the abdominal wall with unincarcerated prolapse, or small openings with incarcerated prolapse; (3) small gunshot wounds where there is no doubt that there is intestinal injury; (4) cases of continuous hæmorrhage into the abdominal cavity; and (5) when the picture of acute peritonitis or sepsis has developed. In these cases transportation must be avoided both before and after operation. Other cases must not be touched on the field. Irrigation and sounding must be avoided. In the Bulgarian War the Greeks only painted the wound with iodine and applied dry aseptic dressings. Then the patients were transported as quickly as possible to a hospital where they could be operated upon under proper conditions. The tincture of iodine gave excellent results. The wounds treated with it looked clean and showed more active granulation than those not painted with it. Bornhaupt reports from the Russo-Japanese War that of 13 patients operated upon on the battlefield 2 died, that is 15.4 per cent, while of 28 operated upon after 6 to 10 days 13 died, or 46.4 per cent.

In peace the theory is that abdominal wounds should always be operated upon, but on account of the uncertainty of the diagnosis and the difficulty and danger of the operation itself this does not always hold good. Operation should be performed if there is internal hæmorrhage, as all cases die if not

operated upon. But in simple penetrating wounds without prolapse of the viscera, without signs of peritonitis, with good general condition and good pulse expectant treatment is best. In collapse or shock operation is indicated; both collapse and shock often change for the better under anaesthesia.

The mortality of the penetrating abdominal wounds described was 25 to 28 per cent in cases operated upon within 12 hours; 50 per cent on those operated upon later.

Their method of operation was as follows: Mixed or chloroform anaesthesia was given. In stab wounds the cut was merely extended; in gunshot wounds an incision was made near the entrance wound and a second perpendicular to it if necessary. If omentum was prolapsed it was replaced or ligated with catgut and removed and the stump buried in case it was soiled or inflamed, as it often was. If intestine was prolapsed it was carefully cleansed and then replaced. If the prolapsed intestine was injured the wound was first sutured and then the intestine buried. Resection was not necessary in any case.

If the intestine is so severely injured by torsion or incarceration in the abdominal wound that there is doubt of its recovery, two procedures may be followed: either an artificial anus is formed or the intestine is protected with iodoform gauze or damp sterile gauze and left outside the wound until its condition improves enough so that it can be replaced, or if gangrene develops it is resected, the ends sutured circularly, and it is replaced.

For the toilet of the abdominal cavity either lukewarm sterile water was used or sterile salt solution. But if even the slightest amount of intestinal contents has escaped into the abdominal cavity it must not be irrigated, but only sponged for fear of scattering infective material. Many authors hold that even effusions of blood into the peritoneal cavity must only be sponged up. Blood, as well as intestinal contents, must be thoroughly removed, for it has been observed that the peritoneum becomes inflamed much more easily if there is blood in the abdominal cavity.

To find injuries of the intestine or mesenteric vessels the intestine must be examined methodically; that is, drawn out bit by bit and examined throughout its length and then replaced. If there is profuse hæmorrhage or much intestinal contents in the peritoneal cavity, eventration may be necessary. The intestines in such cases must be kept damp and not allowed to lie too long on the epidermis, which has been painted with iodine. Compresses moist with physiological salt solution should be laid over and under them. If a mesenteric vessel is injured it is ligated at once with catgut. Sometimes, however, it may necessitate resection of the intestine if the injured vessel lies near the intestine and gangrene of the intestine is to be feared.

If the field of operation is infected a strip of gauze or better a Mikulicz tampon should be introduced. The abdominal wound must not be entirely closed if there is the slightest suspicion of infection. This

delays healing somewhat, but decreases the danger of infection. For suturing the abdominal wall aluminum bronze wire is used. All the layers of the abdominal wall except the skin are included and then the skin sutured with silk. Sometimes only two or three wire sutures are used and between them catgut sutures, which also include everything but the skin, which is sutured with silk.

A. Goss.

Schwartz: Treatment of Abdominal Injuries at the Front (*Traitement des plaies de l'abdomen dans les ambulances de l'avant*). **Bouvier and Caudrelier: Thirty-Three Laparotomies in Cases of Abdominal Injury** (*Trente-trois laparotomies pratiquées sur des blessés de l'abdomen par balles, éclats de bombes et d'obus*). *Bull. et mém. Soc. de chir. de Par.*, 1915, xli, 1257.

Reports by Schwartz and Bouvier and Caudrelier are reviewed and discussed by Quénu, who deduces from them an argument in favor of operative treatment of abdominal injuries in war.

Schwartz operated upon 9 cases, 8 of them with perforation of the small intestine and 1 without any intestinal lesion, but with injuries of the spleen, mesocolon, and great omentum. There were 2 complete recoveries, 2 operative recoveries, and 5 deaths, but 1 of these deaths was due to the carelessness of the patient, not to the operation. He was getting along splendidly on the sixth day, but that night got up to go to the window to look at a fire and the next day developed peritonitis.

Bouvier and Caudrelier report 33 cases of laparotomy for abdominal injuries. In all there were 18 deaths and 15 recoveries, or a total mortality of 54.5 per cent. The mortality was 66 per cent in injuries of the small intestine, 40 per cent in injuries of the large intestine, 60 per cent if only perforating injuries of the large and small intestine are counted. They were favored by the fact that they were very near the front and their patients only had to be carried a few meters; but their mortality is increased by the fact that they operated on all cases as they came, no matter how severe the injury or in what condition of shock the patient was at the time. They generally operated through a median incision; sometimes they merely enlarged the existing wound. When there was an evisceration of the intestine they sutured or resected it outside before opening up the abdomen. Perforations of the intestine were treated by suture; if there were multiple perforations in a short segment the intestine was resected. They used only end-to-end suture. In almost all cases the peritoneum was irrigated with ether after the operation; it was not always drained. Every effort was made to make the operation as short as possible. These results are decidedly in favor of operative treatment.

The opinion of surgeons is very much divided still as to the question of operative or conservative treatment in abdominal injuries.

QUÉNU quotes a report of Sencert, who prefers expectant treatment. Sencert had 58 cases, with only 13 recoveries, a mortality of 77.5 per cent,

while Bouvier and Caudrelier had only 54.5 per cent mortality from operative treatment. Moreover Quénu concludes from a study of Sencert's cases that not all of them were perforations of the intestine, so that, in addition to having a higher mortality, he had less serious cases. The published cases of various other authors are reported. Summing up all the operative cases, the average mortality is 62 per cent; while the average mortality of the conservative cases is 78 per cent. Quénu concludes that operation is indicated except in some cases of tangential shot with both orifices posterior, indicating that the intestine has not been perforated. It is the perforation of the intestine, not of the peritoneum, that is most significant.

The indications for operation depend less on the site of the wound than on the time when the surgeon gets hold of the patient and has the facilities at his command for operation. Patients with abdominal injuries should be operated upon as near to the trenches as possible, to avoid jarring. They should never be carried more than 15 to 20 kilometers. One of Sencert's arguments for conservative treatment is that the patients are in too bad condition to be able to stand the shock of operation, but Quénu reviews the causes of death in Bouvier and Caudrelier's cases and shows that none of them died of shock. One of the questions now to be solved in these cases is the proper time for evacuation of the patients. So far they seem to have been evacuated too soon, for quite a number of cases are reported of patients who recovered from the operation but died as a result of the journey home. Quénu thinks they should make the journey by stages, traveling only a few hours at a time, preferably by automobile, and resting a number of days between the stages.

A. Goss.

Göbel, R.: Gunshot Wounds of the Hip (Über Hüftgelenksschüsse). *München. med. Wchnschr.*, 1915, lxii, 721.

From a comparison of the statistics of the Balkan War and the results of the present European War, Göbel concludes that there has been no improvement in the treatment of wounds of the hip. A large percentage of the wounds are infected, and in the Balkan War 60 per cent of the infected cases died.

Göbel thinks the mortality could be considerably reduced by early operation, and that the conservative treatment which has commonly been used is a mistake. If fever begins in a patient with a hip injury, a careful examination should be made for acute coxitis, and a roentgen picture made. Early diagnosis is of the greatest importance, and early operation will prevent the formation of abscesses, which interfere greatly with the success of later operations. Of the 12 cases of infected hip wounds that the author has treated 3 died, and 4 were barely saved by late resection.

A. Goss.

Hohmeier, F.: Treatment of Gunshot Fractures of the Femur, Particularly Treatment by Nail Extension (Die Behandlung der Schussfrakturen des Oberschenkels mit besonderer Berücksichtigung der Nagelextension). *Beitr. z. klin. Chir.*, 1915, xcvi, 255.

The author reports eighteen cases of severe compound fractures of the femur treated by nail extension.

The objections that have been urged to the method are pain, injury to the bone by the nail, loosening of the nail, possibility of injuring the joint or epiphyseal line, defective action on lateral displacement of the fragments, delay in callus formation, and, most serious of all, danger of infection.

None of Hohmeier's patients complained of especially severe pain. He believes that the nail does not become loosened unless there is atrophy of the bone. In most of his patients he had difficulty in removing the nail at the end of three weeks. One officer had been wounded months before and came for treatment of a badly healed fracture. When the nail was driven in the bone seemed soft and the nail had to be removed after 8 days. But even in such cases nail extension may be used. The atrophic bone will hold the nail for a few days until the dislocation of the fragments is overcome. As soon as it loosens it should be removed and a plaster cast applied. Of course the cast should be applied with the nail still in position and the nail removed only after the cast has completely hardened.

Nail extension by separating the fragments has a good effect on stubborn suppuration at the point of fracture. When the fragments are separated, bits of bone that have been caught between them are freed and discharged and the wound heals.

In none of his cases was the firmness of the joint interfered with. Overstretching of the muscles and flail-joint have been complained of by some surgeons, but this, as well as ankylosis, can only occur if the leg is left inactive. Hohmeier begins massage and passive movements of the joint at once. His patients were eager to assist in the treatment and emulated each other in moving their joints after active movements were begun. In 15 of the 18 cases complete joint mobility was attained; in 3 there was a slight limitation of flexion—2 of these were supracondylar fractures in which there had been a joint effusion, and pain in the knee-joint interfered with movements; the other was a very timid man who would not assist in the active movements and even resisted passive ones.

In no case was the joint injured by the nail. If the nail is driven in too close to the joint it limits the movements of the joint to a certain extent. Hohmeier has found that it is preferable to drive the nail through the os calcis. He can see no justification for the complaint that nail extension does not influence lateral displacement

sufficiently. The same thing is true of adhesive plaster extension. If there is lateral displacement it can be overcome in one method as well as in the other by adding weights on the side indicated.

There was no delay in callus formation in any of the cases and should not be if the correct weight is applied, as the condition arises from the fact that the displacement is not overcome or that the fragments are separated too far.

There was slight infection in 3 cases, but this was due to a defect in treatment. Baths were ordered for the patients, and the apparatus for holding the leg out of the water gave way and the wound was plunged into the water. There were no serious results from any of these infections as the nails were removed on the first signs of inflammation, pain and slight secretion. The other 15 cases were entirely free of infection.

The effect of nail extension is especially good in old, badly healed fractures. After the war there will be many such fractures and this method of treatment will prove valuable in many of them. The author thinks it should be more extensively used in compound gunshot fractures of the femur, though in the ordinary fractures of civil life it will probably continue to be used only when other methods have failed. A. Goss.

Chaput, M.: Diagnosis of Suppurative Arthritis Following Gunshot Fractures (Diagnostic des arthrites suppurées consécutives aux fractures par projectiles). *Presse méd.*, 1915, xxiii, 124.

Gunshot fractures are very frequently complicated by suppurative arthritis and often this complication is not diagnosed. Chaput says that 9 out of 10 fractures of the epiphysis involve the joint. If there is a fistula through which the pus is discharged the case may be afebrile, but the patient becomes cachectic from gradual absorption of septic material. Some patients die from an acute attack following the closing up of the external opening of the fistula, some become affected with severe erysipelas, and some die of septic embolism.

When the fracture is of the diaphysis, diagnosis of a joint complication is more difficult. Sometimes if the fracture is opened up and examined carefully a minute fissure leading to the joint will be discovered. A further test may be made by injecting sterilized methylene blue, 1:1000 into the joint until the synovial membrane is slightly distended; in a few seconds the blue color will appear at the fracture, showing that there is a communication with the joint. After a diagnosis has been made in one of these ways a considerable number of times, it will be found that whenever a juxta-articular fracture properly drained still causes fever, it is almost always complicated by joint infection. Sometimes even when there is no pus in the joint the bones will be found friable and the cartilages, ligaments, and synovial sac will have a violet color, showing infection.

A. Goss.

Axhausen: Treatment of Gunshot Injuries of the Extremities (Zur Versorgung der Schussverletzungen der Extremitäten). *Deutsche med. Wchnschr.*, 1915, xli, 640.

Conservative treatment of injuries of the extremities is recommended in the textbooks on military surgery. Axhausen practiced this during the first few months of the war and was appalled at the number of infections resulting. He thinks this is due to the fact that the wounds in this war are of a different character from those of previous wars. There is much more crushing and mangling of the tissues, owing to the conditions in the trenches and the high percentage of wounds from artillery fire.

For the past few months the author has adopted an entirely different treatment. The cases with much destruction of tissue are taken in hand at once. The crushed skin and tissues are removed, till there is a clean bleeding surface over the whole wound; all foreign bodies, including fragments of shattered bone are removed; fractured ends of bone are brought together and sutured with silver wire. Muscles and nerves are sutured after proper freshening and the ends of the nerves are embedded in muscle tissue. The wound is tamponed, drainage and counterdrainage established, the skin wound sutured, and the limb immobilized.

He believes that it is not necessary to observe the strict asepsis demanded in civil practice. He sterilizes his instruments at the beginning of his day's work and then uses them on different cases without further sterilization. He also sterilizes his hands thoroughly once and then washes them only between cases. It is only necessary to help the natural forces of the body by coarse mechanical measures. The time saved by omitting the finer details of asepsis enables him to care for many more cases.

He has not had a single case of tetanus or gas phlegmon following this treatment. In all cases the temperature soon fell and the tampons and drains could be removed on the eighth to the twelfth day.

He describes a typical case — that of an officer who had a destructive wound of the right elbow, involving the ulnar nerve. He treated it in November and by January the functional use of the nerve was restored without a sign of paralysis or contracture. In injuries with much destruction of tissue, this method of treatment is much superior to the older conservative method. A. Goss.

Ritschl: Twelve Commandments for Prevention of Deformities in the Wounded. *Deutsche med. Wchnschr.*, 1915, Jan. 28.

The author has formulated a set of twelve rules or "commandments" which are being posted in the German field hospitals and circulated broadcast throughout the country. They contain the following instructions as to the prevention of residual deformities:

1. Rest in general is detrimental to the function of joints and muscles.

2. Importance of medico-mechanical after-treatment.
3. Restrict rest to the minimum of time and even then change the position of joints frequently.
4. Massage and electricity.
5. Special care of deltoid and quadriceps femoris muscles.
6. Suggestion for the best position for each individual joint.
7. Do not allow the hand to drop when the arm rests in a sling.
8. Preserve mobility of fingers by active motion.
9. Respiratory exercises.
10. For interstitial hæmatoma, elevation, heat, and massage.
11. Insist on consultation.
12. Pay special attention to the mechanics of the after-treatment.

A. STEINDLER.

Noehte: Operative Treatment of Cord Injuries in the Field. *Deutsche med. Wchnschr.*, 1915, Jan. 1.

The author reports 20 cases of injuries to the spinal cord, 9 of which were operative cases. Of the 11 cases not operated, 9 died from complications. Of the 9 operated cases, 2 improved after operation, 1 improved after the opening of an abscess, and 1 case showed improvement with the exception of motor symptoms. Three cases were not improved, 1 died of meningitis, and 1 died of respiratory paralysis. The author recommends early operation of spinal cord injuries. The third day should decide for or against laminectomy.

A. STEINDLER.

Nonne, M.: War Injuries of Peripheral Nerves (Über Kriegsverletzungen der peripheren Nerven). *Med. Klin., Berl.*, 1915, xi, 501.

The number of injuries to nerves is so great in the present war that, after they have been collected and compared, the knowledge of diagnosis and treatment in such cases will be greater than ever before. Not only are the numbers greater but the soldiers can be kept under observation and after-treatment administered better than in hospitals in time of peace. Nonne has found that the nerve is completely severed much more frequently than is usually supposed. Sometimes the severed ends are separated by as much as 4, 5, or 6 cm. Often the gap is filled in with cicatricial tissue or callus.

In cases where it is evident that the nerve is completely severed operation should be performed early. If the nerve injury is complicated by fracture or other wounds operation should be delayed till these are healed. But in the majority of cases it is impossible to determine by neurological examination whether the nerve is severed; the reaction of degeneration and disturbances of sensation and motility may be as great in cases of severe contusion or concussion. In such cases there should be a delay of six or eight weeks to see if function improves without operation; if not, operate.

The nature of the operation will depend on the condition of the nerve. Neurolysis is sufficient if the nerve is only strangulated or embedded in cicatricial tissue. If it is severed the ends should be freshened and sutured. If the ends are too far separated to be rejoined a piece of nerve may be grafted in. In taking hold of the nerves with forceps only the sensory fibers should be seized; an accurate knowledge of the topography of the cross section of the different nerves is necessary. Sometimes muscles react normally to the galvanic current and show the reaction of degeneration with the galvanic, and vice versa. Sometimes part of the muscles innervated by the nerve show the reaction of degeneration while others react normally; it is necessary to examine all the muscles carefully.

Attention is called to the frequency with which organic lesions are simulated by hysteria, and the author reports a number of cases in which he cured the paralysis following an injury by suggestion. He suspected hysteria because the tendon reflexes were normal. It may be necessary to anesthetize the patient to eliminate the hysterical element. After-treatment in the form of electricity, massage, exercise, hot air, and hot water is of great importance in nerve injuries.

A. Goss.

Cassirer, R.: Operative Treatment of Injuries of the Peripheral Nerves in War (Die operative Behandlung der Kriegsverletzungen der peripherischen Nerven). *Deutsche med. Wchnschr.*, 1915, xli, 520.

Cassirer gives histories of 3 cases. The first was paralysis of the radial from a fragment of a shell. Operation was performed two weeks after the injury; the nerve, which had been severed, was sutured. Three and one-half months after operation there were signs of returning motility, which slowly but steadily progressed. The second had paralysis of the deep branch of the radial. Four weeks later, the nerve, which was completely severed, was sutured; eight weeks after the operation there was movement in the paralyzed region which increased rapidly in strength and extent. The third case was a fracture of the humerus with injury of the radial, followed immediately by paralysis. Operation was performed three months later, consisting of neurolysis and extirpation of a piece of bone from the nerve. After six weeks improvement began.

The author has seen about 240 cases of nerve injury, in 60 of which operation was indicated. In over 25 per cent of these the nerve was completely severed. In the other 180, neurological examination showed that operation was not indicated; there was no reaction of degeneration and motor and sensory functions were preserved. Expectant treatment is generally advocated in nerve injuries, but Cassirer thinks that in all cases where neurological examination indicates operation it should be performed promptly as soon as the wound is healed. He thinks the advantages of early operation far outweigh its dangers.

A. Goss.

Gelinsky, E.: Prevention and Treatment of Infection in Wounds (Betrachtungen über die Wirkung unserer Verbandmittel in ihrer Beziehung zur Infektionsbekämpfung). *Berl. klin. Wchnschr.*, 1915, lii, 72.

The danger from primary infection in wounds is slight; most of the trouble comes from secondary infection. Therefore the first principle to be observed is asepsis to prevent secondary infection. The earlier the first-aid dressing is applied the greater is its effectiveness. We may regard as a part of this asepsis the removal of visible foreign bodies that might carry infection, and the excision of parts that are so badly injured that they are useless and increase the danger of infection.

The second principle to be observed is rest; rest in bed for the patient and rest for the wounded part by means of splints, not only for fractures but for injuries of the soft parts.

Third, the further development of infection may be arrested by antiseptic powders or fluids, though dry dressing is now generally preferred to moist. One of the best disinfecting powders is ordinary sugar. A 30 to 40 per cent mixture of alcohol and balsam of Peru is a powerful disinfectant. All disinfectants have the greatest value if they are applied during or shortly after the incubation period.

The fourth requirement is to provide the best possible conditions for the discharge of wound fluid by incision and drainage. Wounds should never be covered with any impermeable material.

The fifth is to induce local hyperæmia by every means possible. The quicker and more actively all these measures are applied, the more rapidly and with the less danger will the body overcome the infection. A. Goss.

Kümmell: Wound Infection, Especially Tetanus and Gas Phlegmon (Wundinfektion, insbesondere Wundstarrkrampf und Gasbrand). *Beitr. z. klin. Chir.*, 1915, xcvi, 421.

Kümmell reviewed this question at a meeting of the Military Surgeons of Germany recently held in Brussels. He has collected statistics from various hospitals along the western battle front and finds that in 351 cases of tetanus the mortality was 70 per cent. Madelung's statistics also give a mortality of 70 per cent. In the home hospitals at Hamburg the mortality was only 49 per cent. This, he thinks is due to the fact that the cases observed there were the ones with a long incubation period, while the cases observed at the front were those in which the attacks came on soon after the wound. The prognosis, therefore is much better in the cases with a long incubation period.

Treatment is divided into (1) prophylaxis, (2) attempted treatment of the tetanus after it has begun, and (3) relief of symptoms.

Prophylaxis by treating the wounds is not very hopeful, because infection begins practically immediately after the wound is made; but it is worth while to remove fragments of shell and shrapnel

as far as possible, and wash the wounds with hydrogen peroxide, tincture of iodine, etc. Veterinary surgeons have found that tetanus can almost always be prevented in horses by treating wounds immediately with tincture of iodine. The best prophylactic measure is the administration of antitetanus serum. Of the 16 surgeons who took part in the discussion after the reading of the paper all were agreed on this except MENZER, who says that antitoxin does no good and sometimes makes the course of the disease more acute and severe.

The antitoxin is not very effective in checking the disease after it has commenced. The results seem to be better when it is given in combination with salvarsan. Rothfuchs has reported good results from the use of salvarsan and he also reports experimental work showing that when animals were injected with lethal doses of tetanus and one was given salvarsan it lived 24 hours longer than the other which was not given salvarsan. The convulsions should be treated with morphine and scopolamine, and with prolonged or continuous baths. Subcutaneous injections of 25 per cent magnesium sulphate solution are also helpful.

Gas phlegmon seems to be less fatal in war than in peace. The mortality in peace is 80 to 85 per cent, and Kümmell has found that it is only 32 per cent in the present war. The treatment must be energetic and radical. If gangrene has begun the limb must be immediately amputated in sound tissue. If gangrene has not set in free and extensive incisions are sufficient. The wounds should be irrigated with hydrogen peroxide and painted with tincture of iodine, or compresses wet with the iodine are placed in them. A number of the men who joined in the discussion recommended the use of balsam of Peru in these cases.

Kümmell discusses the question of whether these two severe forms of infection can be prevented by the immediate free opening up of all wounds and removal of all foreign bodies; he concludes that they cannot and that such radical action does more harm than good. He advises removing fragments of shells or shrapnel that are accessible without incision, but leaving bullets in the depths of the wound where they are, and only incising if fever sets in. Of 62 such cases 18 recovered aseptically; the course might have been made worse by early interference. The views of the surgeons who participated in the discussion differed on this question, some advising early incision of all wounds. A. Goss.

Schmid, H. H.: Treatment of Gas Phlegmon (Zur Behandlung der Gasphlegmone). *Wien. klin. Wchnschr.*, 1915, xxviii, 556.

Schmid has treated 28 cases of gas phlegmon and concludes from his experience that in cases of gas phlegmon with gangrene, amputation should be performed at once. Amputation should also be performed in cases of deep gas phlegmon with fracture. In superficial gas phlegmon with fracture, deep incisions and excision of the diseased part of the

skin and subcutaneous tissue is sufficient. In deep or superficial gas phlegmon without gangrene or fracture, incision and radical excision of affected parts is indicated.

A. Goss.

Morestin, H.: Use of Formalin in Very Septic Wounds and in Gaseous Gangrene (De l'emploi du formol dans le traitement des plaies très septiques et des gangrènes gazeuses). *Bull. et. mém. Soc. de chir. de Par.*, 1915, xli, 740.

Morestin uses a mixture of equal parts of glycerine, alcohol, and formalin to disinfect suppurating wounds and gaseous gangrene. A number of striking cases of its successful use are reported. The glycerine is important because it prevents the too rapid diffusion of the formalin in the tissues, and also prevents the emission of strong formalin vapor, which irritates the eyes and mucous membranes. The preparation has the disadvantage of being painful, and it should not be used in too great quantities or in too concentrated a solution; likewise it should not be used very close to large vessels as there is a possibility of its causing necrosis of the tissues if applied too long. Morestin also uses the preparation as a disinfectant preliminary to amputation.

A. Goss.

Sibley, W. K.: The Treatment of Bullet and Other Wounds by Ionization. *Urol. & Cutan. Rev.*, 1915, xix, 137.

The conclusions reached by the author are as follows: An antiseptic as applied in ordinary surgical dressings can only affect the parts of the wounds with which it is actually in direct contact, and in all deep-seated conditions this can only be at irregular areas. In all the other parts of the wound the septic organisms are actively multiplying all the time. The amount of penetration of an antiseptic which takes place in a suppurating wound can be only very slight and must be very irregularly distributed. Other things being equal, by the process of ionization, absorption as distinguished from penetration must take place throughout the whole surface area in contact with the solution, and the action of the drug must be regularly and evenly distributed over the whole region under the influence of the electric current. J. H. SKILES.

Dudgeon, L. S., Gardner, A. D., and Bawtree, F.: The Bacterial Flora of Wounds Produced During the Present War. *Lancet*, Lond., 1915, clxxxviii, 1222.

From hundreds of cases of superficial and deep wounds in the present war caused by shell, shrapnel, and bullets, the authors have determined that the bacterial flora of war wounds bear a close resemblance to those of infected tissues found in wounds in large civil hospitals. The bacteriology of severe injuries of soft parts caused by shrapnel is very similar to injuries in civil life infected with horse-fæces.

In severe traumatism of the class referred to, the infection usually results from bacillus *aërogenes capsulatus*, streptococci, and coliform bacilli.

If death occurs from rapid infection it is due to the gas gangrene bacillus. The mere presence of the bacillus *aërogenes capsulatus* in a wound is not considered so important as its presence in tissues which are "under considerable increase of tension." The anaërobic family, and among these the bacillus tetani and bacillus *aërogenes capsulatus*, are the most important members found in comparatively trivial and slight wounds as well as those of severe wounds of bone and soft parts.

Every wound but one was infected with *aërobic* bacteria in association with anaërobic. The exceptional case was a shrapnel wound of the knee-joint. In this case a pure culture of bacillus *aërogenes capsulatus* was obtained from the pus in the joint, and it was apparently behaving as a simple pyogenic bacterium. There were no clinical manifestations of gas bacillus gangrene, but a guinea pig inoculated with a culture of the organism died in 24 hours from rapidly spreading gangrene.

Of patients in whose wounds the bacilli tetani were found, nine had been treated with prophylactic doses of tetanus antitoxin, all of whom remained free from tetanus. One of the other two who had not received the prophylactic dose developed the disease.

The authors found that bacilli tetani may survive as long as two months in a wound without clinical manifestations and they may be present in wounds of all degrees of severity, without the presence of tetanus.

Deep wounds with considerable damage to soft parts, or bone with profuse and offensive discharge, are most liable to harbor bacillus *aërogenes capsulatus*. They may be present in such wounds or wounds trivial in character without manifestations of gas gangrene. The authors suggest that it is probably necessary that certain conditions must be present for the bacillus of Welch to give rise to gas gangrene. The bacillus *aërogenes capsulatus* has been known to survive four weeks.

The necessity for thorough sterilization of all instruments used in the redressing of wounds is very much emphasized by the persistent presence in wounds of these virulent and resistant spore-bearing organisms.

LOUIS A. LAGARDE.

Milligan, E. T. C.: The Early Treatment of Projectile Wounds by Excision of the Damaged Tissues. *Brit. M. J.*, 1915, 1, 1081.

Milligan's paper would lead one to believe that the method had been universally satisfactory in wounds of the skin and superficial fascia, healing without pus occurring. He says that in many wounds of the muscle and bone the same gratifying results were obtained.

The method consists in the extirpation of the devitalized tissues, an anæsthetic being given where indicated: local anæsthesia by novocaine and adrenalin 2.5 per cent; short anæsthesia by the open ethyl chloride method; long anæsthesia by ether or chloroform.

The wound of the skin is boldly cut out with a sharp scalpel. It should be so completely removed that a clean healthy incised wound replaces the contused and infected wound made by the projectile.

The wound of the superficial and deep fascia should be treated in the same way, also the wound of the muscle. The latter, however, presents more difficulties because of the retraction of severed fibers, and because of the distance of the depths of the wound from the surface of the body. The latter can be overcome by making larger incisions.

Removal of loose and fixed bits of obvious foreign and dead matter is, of course, essential. Ample exposure and drainage of the wound is necessary, and those wounds which are too extensive after the above treatment to retain a drainage tube do better than those in which a tube is necessary on account of their depth and narrowness. By this procedure the wound is put in the best possible condition for the bactericidal action of the tissues and the out-poured lymph. It is important to note that it is not wise to impair the resisting and offensive powers of the artificially obtained healthy tissue surfaces by the use of strong or injurious antiseptics.

M. S. HENDERSON.

Israel, W.: Treatment of Injuries by Shells (Zur Behandlung der Granatverletzungen). *Berl. klin. Wchnschr.*, 1915, lii, 570.

All military surgeons have been impressed with the fact that injuries from infantry bullets are to be regarded as aseptic, that no search need be made for the bullet, and the chief indication is to apply an antiseptic first dressing to avoid secondary infection. Unfortunately these same rules have been widely applied in treating wounds from artillery shells. But the latter are almost infected; so that primary infection must be combated from the first and the fragments of shells removed as quickly as possible. Wounds of this kind if not treated promptly are very apt to be followed by tetanus and gas phlegmon. The wound made by the shell should be opened up freely; if the whole tract of the shell fragments cannot be split open, because of the nearness of vessels or nerves, incisions and counterincisions should be made where possible and drainage applied. It is desirable that this should be done on the field, if possible, rather than to wait till the field hospital is reached. Moist dressings are preferred to dry ones in these cases. Moreover the dressings should be changed daily, in order that the first signs of developing gas phlegmon may be detected and the necessary incisions made. This is in contrast, too, to the treatment for rifle bullet wounds, where the dressings are left undisturbed as long as possible.

A. Goss.

Jablons, B.: Pathology of War Surgery. *J. Am. M. Ass.*, 1915, xiv, 2045.

The author reports some interesting observations from the American Ambulance, Paris. Of 1,400 cases admitted 81 died, a 6 per cent mortality.

In the 50 necropsies which were performed, death was caused either by a secondary hæmorrhage from previous wounding of blood-vessels, which reopened after a few days as a result of the sloughing of tissue, or by infective wounds of the brain, spinal cord, chest, or abdomen. Under the latter head, injuries to the head and spinal column represented almost 30 per cent of the fatal cases. Tetanus was the cause of death in only two cases. The universal administration of antitetanic serum has conclusively proved its value. There were 7 fatal cases of gaseous gangrene infection. Bacteriological determinations proved conclusively that the bacillus perfringens was the causal factor in the production of gas gangrene. In 8 undeniable clinical cases of gaseous gangrene, 7 showed the perfringens, in one other instance the bacillus putrificus was associated with the streptococcus.

Pathologically, in gangrene, the lesions have been almost uniform. A punctured wound of the skin, associated in every case with injury to a large blood-vessel, and in most cases with a fracture of the bone seems to have been the *sine qua non*. Following this from one to four days there appeared areas of superficial gangrene with extensive destruction and necrosis of the tissues immediately adjacent to the wound; marked cloudy swelling of the muscles above and below the wound; extensive oedematous infiltration interspersed with gas bubbles varying in size and, externally, a characteristic discoloration of the skin with a pungent foetid odor. Vesicles varying in size from that of a pea to almost as large as the flat of the hand, were present and filled with a sanious fluid. Occasionally this fluid was found to be straw-colored. These blebs were examined bacteriologically and in a few instances they showed the presence of the characteristic bacillus. In some cases the characteristic changes in the tissues remained localized to the affected limb, the opposite limb or even the opposite part of the body showed none of these. C. G. HEYD.

Ranzi, E.: Primary Suture of Gunshot Wounds (Zur Frage der primären Okklusion der Schusswunde durch Naht). *Wien. klin. Wchnschr.*, 1915, xxviii, 555.

In the preceding number of this *Wochenschrift* Bárány recommended suturing wounds at once, and in support of the idea cited the fact that he had treated 12 cases of brain injury in this way with 9 recoveries. Ranzi protests against this method of treatment, holding that one of the most important points in the treatment of wounds is to keep them open to allow free discharge of wound secretions. He contends that Bárány's supposition that all infection is secondary and that suture prevents it from occurring is not true, and that his good results were probably due to the fact that he got his cases within a few hours after they were wounded and was able to treat them in a good hospital. If the method were applied generally under the conditions that have to be met with in war the results would

be disastrous. Ranzi cites historical instances of the method's trial, but it has always been given up.
A. Goss.

Delbet, P.: Treatment of War Wounds (*Étude sur la thérapeutique des plaies de guerre*). *Bull. Acad. de méd.*, Par., 1915, lxxiii, 678.

Delbet discusses the effects of various disinfectants in the treatment of wounds. He studied these effects by means of what he calls pyoculture, which he has already described in a former paper. Pyoculture is the cultivation of the bacteria in the pus itself. Positive pyoculture means that the growth of the bacteria is more abundant in the pus than in bouillon. This indicates a very serious prognosis and demands free opening of the wound.

Pyoculture in which there is absence of growth in the pus and growth in the bouillon shows that there is a struggle between the forces of the body and the bacteria and that treatment is needed. Negative pyoculture, that is bacteriolysis of the bacteria in the pus, shows that the protective forces are the stronger and that no intervention is needed. Studied in this way he finds that iodoform does not have any effect on the microbic flora of a wound; it is useless. Irrigations with ether do not change the bacteria, and irrigations with 1:1000 nitrate of silver even increase the number and vitality of the bacteria. Lactose deodorizes a wound, but does not kill the bacteria. Hydrogen peroxide does not prevent the development even of anaërobic bacteria; in many cases it is a positive detriment to the patient. In fact all these disinfectants seem to have more disadvantages than advantages; they injure the cells and thus do more harm than good.

He thinks that antiseptics should be replaced by asepsis, not only on normal tissues but also in infected wounds. The most important thing is to respect the natural defenses, no matter how much they may be weakened. Only solutions should be used that have the same molecular concentration as the blood serum, and that do not have any chemical action on the cells. Exposure to light and air is one of the most powerful means of disinfecting wounds. Under this treatment he has often seen a positive pyoculture become negative in 48 hours.

A. Goss.

Cheyne, W. W.: An Address on the Treatment of Wounds in War. *Lancet*, Lond., 1914, Nov. 21.

Ibid.: Hunterian Oration on the Treatment of Wounds in War. *Lancet*, Lond., 1915, clxxxviii, 419.

Cheyne, W. W., Bassett-Smith, P. W., and Edmunds, A.: Preliminary Report of a Committee Appointed by the Director-General of the Medical Department of the Navy, in December 1914, to Inquire into the Best Method of Treating Wounds Sustained in Action, Especially During the Early Period After Their Infliction. *J. Roy. Naval M. Service*, 1915, April.

The three articles with the above titles cover practically the same subject, in fact much of the

material in the first two by Sir. W. Watson Cheyne was later reported in full in the third article by the committee mentioned. It has therefore seemed advisable to combine the three articles in one abstract.

The startling fact in connection with wounds in the present war is that the large majority of the wounds are septic, some of them very badly so. Sir. W. Watson Cheyne makes the statement: "All the wounds which I have come across have been septic." There are several reasons for the larger number of septic wounds in war than in civilian life. The most important factor is the length of time which elapses after the wound is sustained until proper treatment is instituted. In former wars it was usually possible to remove the wounded from the battlefield soon after they were wounded; many times they were removed during action. With the modern guns sweeping the field of battle it is usually impossible to reach the wounded during action, and this often means a delay of 48 hours or more before the wounded can be transported to a field hospital. As a second factor the distance the man must be taken adds greatly to the shock and hence makes him more subject to infection. Further, the wounds are often very extensive, lacerated, and deep, and organisms are thus carried deep into the tissues and in many directions.

In order to prevent infection in wounds it is apparent that one of two conditions must be accomplished: (1) the wounded must be given careful expert care within a comparatively short time after the infliction of the wound, or (2) some substance must be applied to the wound to either kill the bacteria or inhibit their growth until the wound can be properly cared for. For many reasons the first condition cannot, at present, be established for all cases. So the attempt has been made to discover some means of keeping the wound in a comparative state of asepsis for two to three days.

What should be the treatment of wounds which reach the surgeon within a comparatively short time, say within 24 hours? Many men believe that a wound should be considered comparatively aseptic and only the gross dirt removed without the application of any antiseptic except perhaps in the superficial tissues. The application of antiseptics to the deeper portions of the wound is supposed by many to do more harm than good: first, by carrying in more infection from the exterior and, secondly, by so lowering the resistance of the tissues that they are more easily attacked by the organisms already present. This method of treatment is bitterly opposed by Cheyne who believes that there should be a revival of the methods which Lister advocated. Cheyne believes that the best treatment of wounds in the early stages is the trimming away of all ragged tissues so that all the recesses may be reached and the application of 95 per cent carbolic acid to all parts of the wound.

It is apparent that when a longer time than 24

hours has elapsed that suppuration has become well established and that this strenuous treatment might greatly harm the patient by disturbing the wall of leucocytes around the wound and even spreading the infection beyond the bounds already established. Sir Cheyne does not recommend the use of this disinfection method in these wounds received at a late time, but advocates the expectant treatment of establishing drainage and frequent change of dressings.

Since many of the wounds must, with the present conditions, be unattended except in a very superficial manner for a long interval, the committee of which Sir Cheyne is chairman has attempted to find some substance which can be used in the wound to kill the bacteria present or inhibit their growth until the wound can be thoroughly treated.

In working out the problem several points had to be considered. The substance must be able to diffuse through blood-clot and tissues to reach the organisms lying deep in the wound. It must not expend all of its antiseptic effect at once but must slowly give out its inhibitory action for two to three days. It must not escape from the wound. It must not be toxic to the patient in the amount necessary to produce the desired effect.

The following were the chief substances tested: carbolic acid tricresol (o. m. p. cresol, as Martindale labels it), other cresol compounds such as izal, cyllin, hycol, and lysol, liquor cresolis saponatus, bichloride of mercury, iodine, salicylic acid, salicylic and boric acids together, the double cyanide of mercury and zinc, paraform turpentine, various essential oils, especially oil of origanum, oil of cinnamon and oil of eucalyptus, alcohol, various colloidal substances (mercury, silver, gold, selenium), balsam of Peru, friar's balsam, and Dr. Mencièr's embalming fluid.

It was found that a preparation of the substance in the form of a paste was the form most suitable. The paste base used to best advantage was: lanolin 6 parts, white wax, 1 part. A paste not only retains its chemical effect a longer time than other forms of medicaments but also is easily kept in the wound.

Experiments were carried out with blood-clot, agar, and meat. It was found, however, that the properties of agar were very similar to those of the other two substances and since it was much easier to obtain it was used in most of the experiments.

The technique of the experiment was as follows: A definite amount of the paste under question, usually 1 gram, was smoothly spread on an ordinary cover slip which was then placed in the bottom of a Petri dish with the paste uppermost. A slab of agar the size of the dish and of definite thickness, one-quarter inch, is then placed over the cover slip. An emulsion of bacteria, usually staphylococcus pyogenes aureus, is then brushed over the upper surface of the agar and the whole incubated at body temperature. The plate is then observed at regular intervals and cultures made from the surface.

It was found that certain of the substances were able either to kill or to prevent the growth of bacteria for two to three days over a portion of the agar. The portion immediately above the cover slip would remain clear while the surrounding portion would show colonies of staphylococci. In the intermediate zone the colonies would be fewer and smaller than at the circumference. Cultures from the center immediately over the cover slip, were in many instances negative and attempts to reinoculate the clear zone over the coverslip in the case of two or three of the substances were futile even after an interval of 21 days.

It is apparent from the experiments carried out that certain of the substances under investigation were able to either kill the bacteria or so inhibit their growth that they would not appear as colonies even under the low power objective. This action was exerted through an intervening layer of agar one-quarter inch in thickness, and in several instances extended a considerable distance beyond the border of the coverslip.

Although agar was used in the routine experiments, the results were checked up by observations, using blood-clot and animal tissue in place of the agar. Other organisms beside the staphylococcus were used, together with a spore-bearing bacillus.

Experiments were carried out on guinea pigs to imitate as closely as possible wounds in war. Many of these were intentionally contaminated with bacillus tetani and bacillus aërogenes capsulatus. While control animals invariably showed marked suppuration and many died, many of the animals treated with antiseptics showed no suppuration.

Of the substances tested the ones that seem to have the most useful effect were boric and salicylic acids together, cresol, and carbolic acid. The mixture of boric and salicylic acids in equal parts, called borsal, is very efficacious, especially when combined with cresol or carbolic acid in a lanolin base. Borsal seems to act best in the form of a powder but this is very apt to be carried out of the wound by the blood and its action lost. It is therefore recommended to reinforce its action by the additional application of 20 per cent cresol paste.

The committee recommends the following treatment of wounds: after the bleeding has been stopped the entire surface should be powdered thickly with borsal (equal parts of boric and salicylic acids). Twenty per cent cresol paste (in lanolin and wax base) should then be introduced by means of a paint tube into the wound in all directions, leaving a small portion of the paste scattered over the whole area of the wound not more than one inch apart. Some of the paste should also be smeared over the skin around the wound and after a final dusting with borsal the emergency dressing applied.

When the patient arrives at the advanced dressing station, the treatment depends on circumstances:

1. If a large number of wounded have to be attended to, patients who have been treated in the

above manner can wait, unless a good many hours have elapsed since the injury.

2. If it is a large or complicated wound, e.g., a compound fracture, it will be well in the first place to clean and disinfect the skin, preferably with 1 in 20 carbolic lotion, then wash out the wound with peroxide of hydrogen and 1 in 20 carbolic lotion, remove pieces of clothing or accessible pieces of shell, clip away any badly soiled tags of tissue and arrest the bleeding. The wound being dried and held open it can then be powdered with borsal and some cresol paste left in various parts of the wound. If it is widely open it may be well to put in a few interrupted sutures to bring the edges somewhat together and prevent the escape of the antiseptic, and finally apply antiseptic dressings.

3. If it is not a large wound, if the clot seems solid and it has been well powdered and plenty of paste introduced into it in the first instance, it is quite possible that sepsis may not occur and if that seems likely all that need be done would be to squeeze a little fresh paste and dust some borsal powder over the surface and the skin around and apply a fresh antiseptic dressing. These wounds will probably not require further treatment until they arrive at the base hospital.

Should the wound be free from sepsis or inflammation on arrival at the base hospital it should not be opened up or syringed or otherwise interfered with. Some fresh paste, diluted if necessary, may be applied over the surface and the skin and a fresh antiseptic dressing put on.

If, on the other hand, there are signs of sepsis the wound must be opened and drained, and otherwise treated according to the experience of the surgeon.

J. H. SKILES.

Derby, R.: Care and Treatment of the Wounded in the European War. *Boston M. & S. J.*, 1915, clxxii, No. 19.

The author relates in a very interesting way his experiences in the Lycée Pasteur, an outgrowth of the American Hospital which was organized for the treatment of wounded by American residents in Paris. The building which was nearing completion and originally intended as a large public school building was readily converted into a modern hospital of 100 beds. The wards were taken over by Doctors Du Bouchet and Blake of the American Hospital. The cuisine was administered by the manager of a large Paris hotel and his wife.

The first patients to be admitted were from the battle of the Marne, early in September. They were brought in from Meaux by automobiles, since military necessity had impressed all railroad traffic to carry reinforcements, ammunition, and supplies from other bases in the south of France to which the wounded were carried on their return from the front. Much suffering to the thousands of wounded might

have been avoided if the injured could have been brought to Paris at once, when it was so near and had such extensive hospital facilities. Naturally it was in the interest of the state to sacrifice something and of the four subjects for consideration — reinforcements, ammunition, supplies, and the care of the wounded — the fortunes of war, in the interest of the state, too often discriminate against the latter.

In his service of 100 beds Derby had 82 cases of shrapnel wounds, 20 cases of rifle bullet wounds, and 1 bayonet wound. Shrapnel wounds were invariably infected. But 4 of the rifle bullet wounds were clean, while the infection in the remaining 16 was milder than that found in the shrapnel wounds. The foreign material driven into the latter with the projectiles were blue and red shreds from French uniforms, and pieces of straw and wood.

Among more than 100 wounds of different anatomical parts and regions there were but 5 of the abdomen and 6 of the thorax. The suggestion is made that the majority of cases of wounds of the body do not reach the rear, but die soon after injury.

There was one death out of 4 cases of gangrene from the welch bacillus, one of the cases recovering after amputation through the thigh.

The treatment of the wounded, many of whom had not received attention for hours and days, consisted in taking all cases at once to the operating room, where the injured part was cleaned under ether anaesthesia if necessary, with turpentine, soap and water, and bichloride. In infected cases the wounds in the skin were enlarged and all gross foreign material and unattached fragments of bone removed. The wound was next irrigated with peroxide of hydrogen. Suitable drainage was established and the parts were then put in splints when necessary and a sterile dressing applied. Daily dressings and irrigation constituted the subsequent treatment.

The wounded were much exhausted when first brought from the front, but this soon passed away under proper care and nourishment.

The transportation which consisted of only a few cars at first has grown until there are now upwards of 70 cars in the employ of the hospital. The drivers are all English and American. They bring the wounded from the field dressing stations and field hospitals. Derby calls special attention to the reduction in mortality when the wounded are promptly evacuated to base hospitals. In December the transportation facilities had so improved that the American Hospital was receiving wounded from the front who had been injured the day before and in some cases even on the same day.

In compound fractures of the lower extremities it was frequently found necessary to amputate "with the idea of saving the individual many long years of chronic bone disease." LOUIS A. LAGARDE.

GYNECOLOGY

UTERUS

Kennedy, B.: Education of the Public to the Early Recognition of Cancer of the Uterus. *J. Indiana St. M. Ass.*, 1915, viii, 277.

The success or failure of the movement lies in the manner of presenting this subject to the people. The cancer problem is really one of how to make medical truths obvious to the laity. What we wish to teach women is to make accurate self-observation and precise utterance of symptoms. They should be taught what every woman should know, viz., the function of normal menstruation, certainly of as much importance to woman as anything in the whole range of knowledge.

Inasmuch as the early symptoms of cancer of the uterus have to do with vague and slight disturbances of the function of menstruation and with the occurrence of slight and irregular discharges, it is of the greatest importance that women should recognize the possible significance of these irregularities.

An educated medical profession is essential to the eradication of cancer and an educated and interested public is no less a necessity.

EDWARD L. CORNELL.

Bergonié, J., and Spéder, E.: Treatment of Inoperable Uterine Cancer by Combined Radium and Röntgen Therapy (Le traitement du cancer utérin inopérable par la röntgenthérapie et la radiumthérapie combinées). *Arch. d'élect. méd., exp. et clin.*, 1915, xxiii, 140.

Radium rays act only to a depth of 3 to 3.5 cm. Röntgen rays, on the contrary, with the use of the present technique and filtration, can be made to act upon tissue at a much greater distance; moreover by the use of the cross-fire method and multiple fields, many bundles of rays may be brought to bear upon a focus of cancer tissue without exercising any harmful effect on the intervening healthy tissues. Bergonié and Spéder therefore recommend a combined treatment with the two kinds of rays, and give a description of their technique and the chemical and physiological effects produced by it. They first use 18 cg. radium bromide, utilizing only the ultra-penetrating rays, the total time of application being 100 to 150 hours; this is followed by röntgen deep therapy. They have treated 5 cases of inoperable or recurrent uterine cancer by this method, with marked improvement. Discharge was stopped and patients who were in such pain that they had to be kept under hypnosis are now free from pain; the general health of all the patients is much improved. The time is too short to say whether the

improvement will be permanent, but the authors consider this combined therapy a decided advance in the treatment of cancer. A. Goss.

Pozzi, S., and Rouhier, G.: Vaginal Hysterectomy Supplemented by Radium Therapy for Cancer of the Uterus (De l'hystérectomie restreinte complétée par la radiumthérapie dans les cancers de l'utérus). *Rev. de gynéc. et de chir. abd.*, 1915, xxiii, 209.

Pozzi and Rouhier think that the extensive operation for cancer of the uterus, as practiced by Wertheim and others, has been carried too far. The immediate mortality is very high; even with the surgeons who have made a specialty of the operation and whose results are the best, the operative mortality is 15 or 16 per cent, and taking the average of the mortality statistics it is from 25 to 30 per cent. In spite of the fact that it is such an extensive and serious operation, it is very often not complete. Practically all the glands of the pelvis receive lymphatics from the neck of the uterus; therefore a complete dissection of the pelvis would be necessary to be sure of reaching all infected glands; this is manifestly impossible. The operation itself opens up large cellular spaces through which the infection may spread.

In view of the above facts the authors advocate a more conservative operation for cancer of the uterus, and they believe the best results can be obtained by vaginal hysterectomy followed by radium treatment. They do not advocate the use of radium alone, except in inoperable cases, neither do they advocate its use before operation, because the rays produce fibrous cicatricial tissue which makes the operation much more difficult; but used after operation, so that all the force of the rays may be concentrated on such microscopic remnants of tumor-cells as may be left after the removal of the mass of the tumor, they have found it very effective. They filter the rays so that only Dominici's ultrapenetrating rays are allowed to pass.

They describe in detail the technique that they employ, giving a number of illustrations of the operation. They emphasize the importance of curettage and cauterization as a preliminary to the operation, and describe their method of inserting the radium tube in the drainage immediately after the operation. A. Goss.

Warner, J. W.: Physiological and Pathological Changes in the Endometrium. *N. Y. M. J.*, 1915, ci, 1213.

The author studied the clinical histories in conjunction with the histological findings in 127 cases

of uterine curettage for conditions other than malignancy. The specimens were obtained within the limits of 10 days before or after menstruation, the majority being much nearer the actual time. Twenty-five patients who were studied had been curetted in the resting stage. All were reported as having some form of endometritis. When the cases were studied with special attention to the menstrual chart it was necessary to revise some of the diagnoses. Eighty-five per cent showed the lesions of true inflammation. Twelve per cent were not inflammatory — a sufficient number to show how the changes incident to menstruation may be confounded with those of inflammatory conditions. The cases curetted in the resting stage all showed the changes of true chronic endometritis.

The author wishes to emphasize the contention that more attention to the menstrual variations will further the advance of knowledge in the relationship between the natural and morbid conditions in the endometrium. C. D. HAUCH.

Boldt, H. J.: Prolapsus of the Uterus. *Am. J. Obst.*, N. Y., 1915, lxxi, 930.

While relief may be afforded to a greater or less degree in cases of partial prolapsus with or without retroversion or retroflexion, by means of mechanical supporters, the author has never seen a case of well-marked descensus or prolapsus cured except by surgery.

In discussing the etiology of prolapsus he calls attention to the fact that women who are kept in bed for ten days or more after confinement have a slower involution of the uterus and are more apt to have displacements than women who are allowed to get up early.

The number of operations devised for the treatment of these cases is the strongest evidence that failures may follow any procedure, but the author believes that no surgical intervention has been devised which does not give some benefit, for a time at least. Before deciding on an operation the patient should be consulted as to whether future offspring is desired.

For the young woman who wishes more children the author forms the ventral suspension by the round ligaments by the Gillian method combined with a plastic on the pelvic floor, but not with too much narrowing of the vaginal canal. He would amputate the cervix only in exceptional cases where it is unusually long. The Alexander operation is entirely inadequate in descensus of the uterus.

In cases of marked descensus, partial prolapsus, and complete prolapsus, in patients of whom no further offspring is expected, the author amputates the cervix and does the radical vaginal fixation after the Watkins-Schauta-Wertheim method.

Finally, in cases of complete procidentia in old women or widows who do not expect to marry again he advises the complete extirpation of the uterus and vagina, and the building of a solid perineum. The operation is described in detail. C. H. DAVIS.

Outland, J. H.: Indications for Vaginal Hysterectomy; Simplified Technique Used in 84 Cases, with One Death. *Med. Herald*, 1915, xxxiv, 206.

The author considers that the following conditions indicate vaginal hysterectomy: early carcinoma of the cervix, submucous fibroids, small fibroids not too large to prevent delivery of the uterus, bleeding polyps, and a group of cases including such conditions as: (1) atheromatous conditions of the uterine blood-vessels causing continued hæmorrhage; (2) lacerations of the cervix highly suspicious of carcinoma; (3) hypertrophic endometritis giving the cardinal symptoms of carcinoma.

The 84 cases operated on are classified as follows: 21 bleeding submucous fibroids, 9 cancers of the cervix, 18 lacerations and erosions of the cervix, 10 small uterine fibroids, 8 bleeding polypi, 8 endometritic uteri, and 10 cases of essential hæmorrhage of the uterus. One of the cases died.

Outland advocates the method for the following reasons: the mortality is low, the operation is rapidly performed, there is no abdominal scar and no danger of post-operative hernia.

The contra-indications are: a uterus too large to be delivered per vaginam, procidentia with cystocele, and a uterus fixed by adhesions.

The principal steps in the operation are as follows: The anterior and posterior lips of the cervix are caught by a tenaculum. The incision completely circumscribes the cervix. The tissues are dissected from the cervix by means of a layer of gauze placed over the operator's fingers. The uterus is drawn out anteriorly by two claw retractors. The posterior cul-de-sac is entered with the finger. Two clamps are placed on the right broad ligament which can then be cut. Similar clamps are placed on the left broad ligament. Suturing is done with double No. 2, ten-day chromic catgut, two sutures being used on each side, the ends being left long and secured with forceps which are removed and the sutures cut short after 24 hours.

C. D. HAUCH.

Darnall, W. E.: Practical Observations Drawn from 161 Cases of Hysterectomy. *Am. J. Med. Sc.*, 1915, cxlix, 877.

Ligatures applied to the six main trunks of the uterine circulation adequately control all bleeding during hysterectomy. The operation is much facilitated if the appendages on both sides are thoroughly freed of adhesions and brought up into the field before the broad ligaments are divided.

From 60 to 80 per cent of fibromyomata undergo some form of degeneration sooner or later and are more or less associated with cardiovascular disease. Darnall is therefore inclined to remove all palpable growths of any size, particularly if productive of symptoms.

The mortality of hysterectomy for uncomplicated fibromyomata is not over 2 per cent. The largest tumors are usually the easiest to remove. A more difficult variety to remove are those in the lower

portion of the uterus, either anterior or posterior or between the layers of the broad ligament. Inflammatory disease of the appendages may make the operation extremely difficult.

All bowel denuded of its serous coat should be carefully covered with peritoneum or an omental graft. Extensive denudation of the gut may demand resection. Attention to this detail is necessary to avoid adhesions, fecal fistula, or peritonitis.

F. C. IRVING.

ADNEXAL AND PERIUTERINE CONDITIONS

Halban, J.: Symptomatology of Corpus Luteum Cysts (Zur Symptomatologie der Corpus luteum Cysten). *Zentralbl. f. Gynäk.*, 1915, xxxix, 409.

It is generally taught that ovarian cysts do not have any effect on menstruation. But this is not true in case of corpus luteum cysts. The corpus luteum inhibits menstruation, and in case a cyst develops this action is prolonged, so that women frequently come to the physician complaining that the menses have stopped. On the discovery of a tumor of the adnexa on one side a diagnosis of extrauterine pregnancy is apt to be made.

A knowledge of the fact that corpus luteum cysts stop menstruation will aid in making a differential diagnosis, and it is important that it should be made, because early operation is not indicated in corpus luteum cysts; they frequently disappear spontaneously. When the cysts are absorbed or removed menstruation reappears.

Many of the women treated had had irregular menses before, and this suggests the possibility that corpus luteum cysts may be caused by hypoplasia of the genital organs. Removal of such a cyst during pregnancy does not necessarily interfere with pregnancy. Halban cites a case in which the pregnancy continued to term. Alternating cysts, that is, cysts that appear first in one ovary and then the other, are corpus luteum cysts. These cysts are thin-walled and rupture easily, even on the most careful bimanual examination.

A. Goss.

Knott, V. B.: Ovarian Carcinoma in a Child Aged Eleven. *J. Am. M. Ass.*, 1915, lxiv, 1577.

The patient, aged 11, a schoolgirl, had a negative family history. She complained of severe abdominal pain, which had been present for three days, before which time she had been feeling perfectly well. There was no menstrual history. Examination showed a well-nourished girl with rosy cheeks and unusually well developed for her age. On palpation a large movable tumor was felt, which rose from the pelvis to the level of the umbilicus. This tumor occupied the median line, but could be easily displaced to either side. It was quite tender on deep pressure and fluctuation could not be elicited. When the tumor was displaced to the left, marked tenderness was found in the right inguinal region over the appendix, with rigidity of the right rectus.

At operation the tumor consisting of the left ovary, together with the tube, was easily removed as it was at no place adherent. The appendix was found somewhat distended and acutely inflamed and was removed. There was no free fluid within the peritoneal cavity and the peritoneum everywhere was glossy and apparently normal. No lymphatic involvement or evidence of disease elsewhere within the cavity could be discovered.

For ten months the child seemed well, had no pain, gained in weight and stature. Then she began to complain of vague abdominal pain, which was not at all constant. Soon her appetite began to fail and she lost weight and strength and became very irritable. There was no constipation or vomiting.

At the second operation, one year after the first, the abdomen was seen to be filled with a quantity of straw-colored fluid. Scattered throughout the cavity were nodules involving parietal peritoneum, visceral peritoneum, intestine, and mesentery. These nodules were hard and irregular in outline. The ileum was adherent in many places and at each point of adhesion was a large nodular mass. The mesentery was filled with large nodular growths. The upper abdomen was involved as well, nodules being present in the liver and stomach. As relief was out of the question, a large mesenteric nodule was removed for examination and the abdomen closed. Death occurred thirty-six days following the second operation.

On pathologic examination the tumor showed a teratoma in a state of carcinomatous degeneration. The small gland showed carcinoma secondary to ovarian tumor removed one year previous.

EDWARD L. CORNELL.

Holz, S.: Treatment of Chronic Posterior Parametritis by Colpeurynter Massage and Shortening of the Round Ligaments (Die Heilung der Parametritis posterior chronica durch automatische Colpeuryntermassage und Fixation der Ligamenta rotunda). *Zentralbl. f. Gynäk.*, 1915, xxxix, 441.

Chronic posterior parametritis, that is, adhesive bands in Douglas' pouch, is a very frequent complaint. To deal with these adhesions surgically is a mistake, for they only form again. Massage is the best treatment, and this may be accomplished automatically by the insertion of a colpeurynter with a cubic content of 50 to 100 ccm. The colpeurynter is so small before it is filled that it can easily be inserted even in nulliparous women. It can be worn two, three, or even four days, and it relieves the pain so much that the patients are glad to come back for further treatment. It is cleansed and reinserted, and this is kept up till the patient is without pain. Even after the first insertion a marked softening can often be felt in the posterior vault of the vagina.

The colpeurynter exercises a true massage; it is filled so that it is elastic, and with the respiratory

movements it is alternately compressed and released from pressure. In addition to this auto-massage there may be osmotic conditions that favor recovery, but when the patient discontinues treatment the condition is apt to return. In order to avoid this the ligaments of the uterus are shortened.

A. Goss.

Ward, G. G., Jr.: Clinical Observations on the Treatment of Acute Pelvic Inflammations.
Am. J. Obst., N. Y., 1915, lxxi, 881.

The author gives a careful review of the literature on this subject, calling attention to the swing of the pendulum between conservative and radical treatment. At the present time the evidence is in favor of conservative treatment. The author has recently made a study of 39 of his cases of pelvic abscess showing indications for operation. Among the 39 cases there were 4 deaths. Of the 35 remaining, 24 who have been examined or heard from are reported as cured; 2 cases required a subsequent radical operation; 1 case is convalescing in the hospital; 8 were discharged as cured but have not been heard from. Thirty-eight cases were treated by posterior colpotomy and drainage, and 1 case was operated upon by an extraperitoneal incision above Poupert's ligament, with thorough drainage of the vagina. Tube drainage was employed in 30 cases, and gauze drainage in 9.

Pregnancy is known to have occurred in 3 cases since operation. These points are emphasized:

1. A large proportion of the cases of parametritic exudate following labor or abortion, and many cases of perimetritis will resolve without abscess formation if let alone, and if pus does form, if in small quantity, it may be absorbed, frequently with the preservation of function of the pelvic organs.
2. The too ready resort to the curette or to other intra-uterine manipulations at the onset of uterine infection is responsible for the formation of exudates in a very large percentage of cases.
3. Many cases are operated on unnecessarily, or too early, with the result of increasing or disseminating the infection, thus prolonging the convalescence and sometimes producing a fatal termination.
4. Incision and drainage should not be employed until indications of localized collection of pus are well defined and show evidence of septic absorption.
5. The selection of the proper form of drainage applicable to the case is important.
6. Failure to cure a pelvic abscess by colpotomy and drainage is nearly always due to neglect in not keeping the incision open sufficiently long.
7. In acute pelvic suppurations, when the indications for interference are present, the operation of choice should be a simple incision and ample drainage.

C. H. DAVIS.

EXTERNAL GENITALIA

Wittkopf, H.: Carcinoma of Bartholin's Gland
(Über das Karzinom der Bartholin'schen Drüse).
Zentralbl. f. Gynäk., 1915, xxxix, 369.

Carcinoma of the vulva is rare, and even when it occurs it is generally in the region of the clitoris. Wittkopf has been able to find only 12 cases of carcinoma of Bartholin's gland in the German literature; but in spite of its rarity he has recently had 2 cases at the Kiel Gynecological Clinic. The women were 42 and 59 years old and had previously been well. The first patient had her attention called to the small ulceration on the labium majus by bleeding following a fall; in the other case there had been a troublesome discharge from the ulceration for some time. One physician had made a diagnosis of syphilis, but the Wassermann was negative. The tumor and the inguinal glands were removed in both cases. Both patients recovered, though one had thrombophlebitis. Both are being given radium after-treatment. The radium is inserted in the cavity left by the removal of the tumor. This may be supplemented by röntgen rays, but in spite of this the prognosis for ultimate recovery is poor.

In most of the cases reported there has been rapid recurrence. The only hopeful method of treatment is early removal, and so if there is any change in the vulva that arouses the slightest suspicion of malignant new-growth a bit of tissue should be excised and examined.

A. Goss.

MISCELLANEOUS

Fullerton, W. D.: Gynecology—Past, Present, Future. *Am. J. Obst.*, N. Y., 1915, lxxi, 911.

The author reviews in a general way the contributions of the gynecologists to the development of surgery, points out the necessity of a long careful training in the development of the gynecologist, and raises the question as to the future of this specialty. He calls attention to the fact that the general surgeon while technically able to perform the gynecological operation is inferior to the gynecologist when it comes to diagnosis from the history and physical examination, deciding when and how conservatively to operate, in macroscopic and microscopic examinations of the tissues inspected at operation or excised, and in the most accurate prognosis.

He urges that the general surgeon exclude gynecology and obstetrics from his field and devote his entire time and resources to the development of general surgery, and that gynecology and obstetrics combined, be taught, studied, and investigated by specialists in that line.

C. H. DAVIS.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Caldwell, W. E.: Report on a Series of Placenta Prævia Cases. *Am. J. Obst.*, N. Y., 1915, lxxi, 937.

Caldwell reports five cases which have been treated at the Bellevue Hospital during the past year. These are of particular interest because they were all treated by means of the gauze pack. Of these five women, one died from uræmic coma on the ninth day, and it is hardly fair to charge her death to placenta prævia. The others were all discharged in good condition. Of the babies, two were dead, one macerated; all were premature, two others dying within the first days, and only one lived any length of time. This one has since died.

From his experience at Bellevue the author believes that the hard, undilatable cervix in placenta prævia is found more frequently in the marginal and partial varieties. In the central variety the cervix, though friable and easy to tear with rough treatment, dilatation will occur under proper gauze packing and usually in a surprisingly short time. At the Bellevue Hospital, they use an iodoform gauze pack both before and after delivery.

C. H. DAVIS.

Hoogenhuize, C. J. C. van: Creatin as an Index of Pregnancy Intoxication (Kreatine als Aanwijzer van Zwangerschapsvergiftiging). *Nederl. Tijdschr. v. Geneesk.*, 1915, i, 1786.

Experimental research has shown that in a normal pregnancy the proportion of creatin in the urine is always below 20 per cent of the total creatinin. If the proportion is above 20 per cent it gives warning of threatened eclampsia.

Van Hoogenhuize gives the findings in 15 cases, 2 of which were eclampsia cases. In one of the eclampsia cases the percentage of creatin varied from 19.1 to 44.6 per cent, the average being 28.1 per cent; in the other it varied from 29.1 to 38.6 per cent. The latter patient had had four normal deliveries, then a case of puerperal eclampsia, and in the present pregnancy eclampsia had developed even before delivery. In another case the creatin ranged from 28.3 to 36.9 per cent, but in this case eclampsia was warded off. In a fourth case the creatin average was 25 per cent. In all of these cases the urine had been examined for creatin before delivery.

In six other cases in which there were unmistakable signs of intoxication the creatin ranged from 20.7 to 44.5 per cent. The highest percentage, 49.9 per cent was in a woman who had hydatidiform mole. In one case of hydramnios with albumin,

tube-casts, and leucocytes in the urine, the range was from 40.7 to 45.4 per cent. Two other cases showed slight albuminuria, but the course was entirely normal; the creatin range was from 10 to 19 per cent. Some of the women had been examined before pregnancy and no creatin found.

From his findings the author concludes that if other sources for creatin in the urine can be excluded, the finding of it may help to make a diagnosis of pregnancy in doubtful cases. A. Goss.

Polak, J. O.: Observations on 227 Cases of Ectopic Pregnancy. *Am. J. Obst.*, N. Y., 1915, lxxi, 946.

The author reports 227 cases of ectopic pregnancy operated on in his several hospital services since 1900, with only 4 deaths. Three of the fatalities were due to septic peritonitis and one was due to hæmorrhage. From an analysis of these cases he believes that properly diagnosed ectopics should never reach the acute stage, and an early diagnosis is possible in the majority of cases.

Of these 227 women, 222 presented some menstrual anomaly, as a period of amenorrhœa, prolongation of the normal period, anomalous character of the bloody discharge, or an anticipated period followed by an intermittent or continuous metrorrhagia.

Pelvic pain was absent in only one patient. The attacks of pain may be general, abdominal colic, or sharp, colicky pains, referred to the region of the embryonal sac, followed by intervals of hours or days of complete remission. Abdominal sensitiveness following the paroxysms of pain has been noted in all of the cases observed. A mass or tumor was present in every instance. It was tense, tender, and the pulsation of the uterine artery on the side corresponding to the mass was always more marked.

Only the usual signs of rupture are mentioned, but especial attention is called to the falling of the blood-pressure. All of Polak's cases in the acute stage have shown a blood-pressure of less than 100 mm., and many a pressure of only 80 mm.

The author urges that the unruptured cases be operated upon, the tube incised, and the pregnancy evacuated or the tube extirpated as soon as the diagnosis is made. In the ruptured cases in the acute stage presenting the symptoms of shock, the author postpones the operation until after the reaction takes place. In these cases he proceeds as follows: On admission the patient is placed in an extreme Trendelenburg posture, the pulse and blood-pressure taken and recorded, and a hypodermic of morphine given (without atropine). No salines and no stimulation are given. The pulse is taken every fifteen minutes and the blood-pressure every

hour. Water is given freely by the mouth if not vomited. When the reaction has taken place as shown by a slowing of the pulse and an increase in the blood-pressure he considers it time to operate. For the operation he uses morphine and spinal anaesthesia using one and one-half grains of novocaine.

From the clinical experiments the author states that curettage does not control the post-ectopic bleeding, but that the persistence of uterine bleeding is dependent upon the presence or absence of a corpus luteum cyst.

C. H. DAVIS.

Ahlfeld, F.: Transparency of the Abdominal Walls in Pregnancy (Die Durchsichtigkeit der Bauchdecken Hochschwangerer). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xli, 457.

Ahlfeld calls attention to the fact that when the abdominal walls are very much stretched in the latter months of pregnancy they often become quite transparent. By placing the patient in a good light on a table high enough so that the physician does not have to bend his head, the abdomen can be inspected very effectually. He cites a case in which he could see the cord passing over the back of the child, and could actually see its pulsations, and another in which he could see the individual parts of the uterus and adnexa. As an illustration of the practical value of observing this fact, he cites a case in which caesarean section was to be performed. On inspection a distended vein could be seen running along under the midline, exactly where the incision would have been made if the vein had not been noticed. Visual inspection in this case undoubtedly saved the surgeon from incising this vein.

A. Goss.

Harrigan, A. H.: Nephrectomy During Pregnancy. *Surg., Gynec. & Obst.*, 1915, xx, 657.

Harrigan reports an interesting case of nephrectomy performed on a woman four months pregnant. She recovered and subsequently was delivered of a healthy well-formed child.

The patient, aged 21, had been ill ten days with septic symptoms pointing to a primary involvement of the right kidney. She had high temperature, chills, leucocytosis, and rapid pulse. The differential diagnosis lay between pyelonephritis secondary to puerperal pyelitis, and unilateral hæmatogenous infection of the kidney.

An immediate operation was decided upon. Through a right lumbar incision the kidney was delivered. The perirenal tissues were infiltrated and the surface of the kidney presented innumerable yellow nodules on foci. The macroscopic appearance confirmed the diagnosis of multiple septic infarcts of the kidney, and nephrectomy was decided upon. The recovery was uneventful. The patient did not abort, and at the middle of the eighth month of pregnancy labor was induced and a healthy child was born. At the end of two years the patient is in excellent health and suffers no

inconvenience from the loss of the kidney. The pathological examination showed the lesion to be that of unilateral hæmatogenous infection of the kidney — multiple septic infarcts of the kidneys.

A review of the literature reveals 36 additional cases of nephrectomy during pregnancy. There are numerous case reports of nephrotomy during pregnancy and several excellent monographs relating to the obstetrical future of women previously subjected to nephrectomy. Six authors failed to mention the immediate results. Of the remaining 30 cases all recovered but 2. Of the 28 patients who recovered the obstetrical outcome is noted in 24 cases: 20 went to labor without accident or complications; of the remaining 4, 2 aborted spontaneously and in the other 2 abortion was induced. Oppel's case in which abortion occurred spontaneously is excluded in this computation as no mention is made of the operative result.

The cardinal clinical points worthy of notation are that nephrectomy during pregnancy has a comparatively low mortality; that abortion or premature labor occurs but seldom; and that as a rule pregnancy proceeds to term without accident or complication.

LABOR AND ITS COMPLICATIONS

Longaker, D.: Obstetric Forceps. *Therap. Gaz.*, 1915, xxxix, 385.

Longaker gives the following advice regarding the use of forceps:

1. The obstetric forceps is a pure tractor not a compressor, and must be applied in the gentlest manner.
2. The attempt by the use of forceps to overcome relative disproportion when the head is high is a questionable procedure.
3. The use of high forceps in the absence of disproportion is allowable and feasible.
4. Post-maturity, overgrown baby, ossified head, and impacted non-rotating posterior occiput position are strong contra-indications. In these cases caesarean section is strongly advocated.

H. G. GARWOOD.

Groot, J. de: Influence of Intra-Uterine Obstetric Maneuvers on the Morbidity and Mortality of Parturients (L'influence des manœuvres intra-utérines pendant l'accouchement sur la morbidité et la mortalité des accouchées). *Arch. mens. d'obst. et de gynéc.*, 1915, iv, 225.

The results reported by de Groot are from the records of the maternity service of the University of Utrecht. He classifies in one group the cases in which internal exploration was the only measure, and in another those where complications required different measures, for instance, tamponing or artificial delivery at term or before. He describes the technique used in internal exploration and in preparing the woman for it.

Between 1899 and 1908 no internal examination

was made in 41 febrile and 31 afebrile cases, while internal examinations were made on an average of more than five times in 441 afebrile patients and 446 who became febrile. This shows that internal examination does not have any effect on the morbidity, and the records do not show that examination with gloves is superior to that without them. Among the 84 cases that required premature delivery by bougie there were 3 cases of grave infection and 10 of mild infection. The uterus and vagina were tamponed in 117 cases, with mild infection in 22 cases and severe infection in 15; there was only one death and this was due to extraneous causes.

The maternity service at the University of Utrecht consists of a clinic with an average of about 300 deliveries a year. Here the pregnant women are examined and are supervised afterward at home. Connected with this is an out-patient department, the polyclinic service, which conducts about 1,900 deliveries a year. Every second year students assist at several deliveries in the clinic, after having taken a course in external examination of the pregnant woman. Before his final examinations each student has to spend two months in the service of the obstetrical polyclinic, living in a house devoted especially to this purpose and maintained by the medical students themselves. There are always six or seven students in this house. The technique for sterilization is the same as in the clinic and it is carried out as carefully. Facilities are provided for isolating the woman if necessary. The morbidity is lower than in the clinic, which seems surprising at first, but this is due in part to the fact that all the worst cases are sent to the clinic. The fact that it is so low, however, shows that the usual high morbidity in out-patient work is due to lack of care. In 79 cases of intra-uterine tamponing there was infection in 22, but it was severe in only 9, and there were no deaths.

Summing up the results of his observations he finds that there was a total of 335 cases without any death from infection. He thinks that the virulence of the bacteria contained in the vagina is not very great, and the virulence of bacteria introduced from outside depends on the condition of the vagina at the time of delivery. He thinks too much stress is laid on bacteriological examinations in such cases, and not enough on clinical experience. He not only recommends tamponing, but also manual extraction of the placenta when necessary. A. Goss.

Vogt, E.: Subcutaneous Symphyseotomy (Subkutane Symphysiotomie). *Deutsche med. Wchnschr.*, 1915, xli, 703.

Vogt reports 30 cases of subcutaneous symphyseotomy performed in the Dresden clinic: 7 were for contracted pelvis of the third degree, and 23 of the second degree. Only 2 of the patients were primiparæ, and in both of these the vagina was wide so that there was little danger of its tearing during delivery. Generally after symphyseotomy the obstetrician can wait for spontaneous delivery.

In 19 of these 30 cases delivery was spontaneous. By waiting for spontaneous delivery all complications may be avoided if the operation itself has been properly performed. Vogt had no injuries of the bladder or urethra in any case.

Active contractions are necessary for spontaneous delivery. These may be produced by intramuscular injection of pituitrin. The pituitrin is given while the woman is on the operating table; about three minutes later its effect becomes apparent. When the head has entered the pelvis so that there is no longer any danger of prolapse of the cord the patient is taken back to bed. It is possible to wait for spontaneous delivery only when the head is presenting and in good position and there is no prolapse of the cord.

In one of the 11 cases where the author delivered by forceps he thinks spontaneous delivery would have been possible. It was a transverse presentation and one of his early cases. The time between the operation and the delivery varied from three minutes to four hours and 40 minutes; the latter case was a primipara with rigid soft parts. Theoretically it is possible to injure the peritoneum, but this may be avoided by using a button-tipped knife. There may be injury of the blood-vessels and hæmatoma. The blood is venous; in all of Vogt's cases it was slight and easily controlled by pressure. Forty-four per cent of the cases were febrile, but only one of the mothers died, and she had had a rupture of the uterus before the operation, which was not recognized in time. The fever was doubtless due to absorption of the hæmatomata. Embolism was not observed in any case. All of the children lived but three which could not be saved even by symphyseotomy.

Vogt advises the use of a small, curved, button-tipped knife to scrape away the ligaments and corpora cavernosa of the clitoris from the edge of the bone. This avoids the formation of hæmatomata due to the extravasation of blood from the corpora cavernosa, and thus decreases the number of febrile cases. Symphyseotomy makes succeeding deliveries easier as it widens the pelvis. A. Goss.

Peterson, R.: Under What Conditions Is Craniotomy on the Living Child Justifiable? *J. Mich. St. M. Soc.*, 1915, xiv, 319.

Craniotomy on the living child is justifiable under the following conditions:

1. When the mother is septic. Where repeated examinations and forceps application have been made, the mortality of cæsarean section is high, between 30 and 50 per cent. Even the extra-peritoneal section has a high maternal and foetal mortality. Pubiotomy is also contra-indicated in the presence of sepsis. Where the child can not be delivered through the natural passages and the suprapubic operation is contra-indicated, craniotomy is the only possible solution.

2. When the child is feeble and not likely to live under any conditions. It is admitted that this

is a difficult point to determine. The condition is believed to exist in cases where there has been undue cranial compression from forceps, in impacted head, brow presentation and face presentation with the chin posterior, and sometimes in persistent occipitoposterior position, and arrested head after version.

3. When the foetus is a monster or so badly defective as to make its future existence problematic.

4. When from the necessities of the case the choice must be made between craniotomy and the major obstetric operation in unskilled hands.

When the cases from the beginning of pregnancy have been in the hands of a skilled obstetrician only rarely will it be necessary to resort to craniotomy, as the proper obstetric procedure will have been adopted long before the onset of exhaustion or sepsis.

D. H. BOYD.

Skeel, A. J.: Anæsthesia in Obstetrics. *Ohio St. M. J.*, 1915, xi, 372.

Methods and routes used to produce obstetric analgesia or anæsthesia may be divided for practical consideration into three groups:

1. By the alimentary tract—mouth or rectum.
2. By hypodermic injection—local anæsthesia, spinal anæsthesia, or systemic effects.
3. By inhalation—anæsthesia or analgesia.

Under the first division chloral and bromides are mentioned. The author believes they are best used only in the first stage of labor, particularly in cases of tense cervix.

In the second group he discusses the various opium derivatives and advises their use only in the very first part of the first stage of labor.

In the third group ether, chloroform, and nitrous-oxide-oxygen are the drugs used. At St. Luke's Hospital nitrous-oxide analgesia was used in 52 cases; of these 30 were under his personal care. He describes his procedure for relief of pain.

A careful selection of cases is made according to sensitiveness to pain, condition of the cervix, and whether primipara or multipara. Morphine, $\frac{1}{8}$ gr. by hypodermic, sometimes accompanied by scopolamine and sometimes not, is given or withheld according to these indications. Chloral hydrate is occasionally used when on account of individual idiosyncrasy morphine is contra-indicated. When the cervix is completely dilated and usually after the largest circumference of the head has passed the brim, nitrous-oxide analgesia is begun. From 30 to 60 gallons of nitrous oxide per hour and 15 to 20 gallons of oxygen is the usual quantity necessary to secure analgesia and insure freedom from cyanosis. The patient should not lose consciousness at all, being able to respond to the accoucher's directions to bear down or stop when desired.

W. D. PHILLIPS.

Lynch, F. W.: Nitrous Oxide Gas Analgesia in Obstetrics. *J. Am. M. Ass.*, 1915, lxiv, 813.

The author has used the method for more than one hour in 34 cases. Analgesia has been main-

tained from the latter part of the first stage, or from the time when the pains became severe, and all the patients have stated that pain was negligible and practically nil. There were 25 primiparæ and 9 multiparæ in the series. Analgesia was continued in 34 cases more than one hour; in 32 cases more than two hours; in 12 cases more than three hours; in 4 cases more than four hours; and in 1 case more than six hours. Three labors were terminated with forceps with the gas carried to the surgical degree. They were all three primiparæ, one of 39 years, one of 35, and one of 25, in whom there was transverse arrest of the head. There was no case of inertia, post-partum hæmorrhage, or shock.

Hitherto the author has started the treatment when the pains became severe enough to occasion complaint. Pure nitrous oxide gas is turned on full at the beginning of the pain and the patient is told to breathe deeply, but rapidly, through the nose. Five or six respirations suffice to produce analgesia, even in the presence of the uterine contraction. The nose-piece is then placed over the mouth; the patient is instructed to breathe through the mouth, and analgesia is maintained by admixing oxygen with the gas until the pain ceases. This process is repeated with each pain. The percentage of oxygen ranges from nothing to 10 per cent. It is more difficult to maintain analgesia with the mouth-piece without wasting gas, since the depth of anæsthesia is more difficult to control. Oxygen must be used more freely. When the head distends the perineum, the anæsthesia is carried to the surgical degree and the color of the patient is controlled with oxygen. Separate tanks of gas and oxygen are best and cheapest. Their small size admits of easy transportation. Separate tanks permit variation in the amount of oxygen used. With these small tanks the method costs from \$4.00 to \$5.00 per hour, varying with the duration and frequency of the pains and the skill of the operator.

The author is of the belief that this will make the use of scopolamine-morphine unnecessary in the treatment of private cases. Its ease of administration and freedom from danger speak volumes for its popularity. The technique is not complicated, and, unlike the Freiburg method, it is adapted for use in the private home and is devoid of its many dangers.

EDWARD L. CORNELL.

Breitstein, L. I.: Morphine-Scopolamine Anæsthesia in Obstetrics. *Calif. St. J. Med.*, 1915, xiii, 215.

Breitstein gives a report of the results he obtained by the use of morphine and scopolamine in 14 cases and reviews a discussion by Wakefield in which he cites the results he obtained in 28 cases treated by the same method.

The essentials for success are: (1) Emotional and psychic disturbances prior to operation must be reduced to a minimum. (2) By the use of a suitable anæsthetic pain and fright must be entirely banished at the time of operation.

When labor has once set in the author gives narcophine 0.03 gm. and scopolamine 0.00045 gm. and repeats the scopolamine again in three-quarters of an hour. He gives no more narcophine and scopolamine, except when the memory test indicates that its administration is necessary. Thus the average case requires only five or seven injections.

He conducts his case as if the drug were not given and when the head distends the vulva he usually gives a few whiffs of ether in order to control the straining of the patient and so the added pain will not awaken her.

None of the author's patients developed any abnormalities during the puerperium. Eight cases were primiparæ. Nine cases were entirely successful, three partially successful, and two were failures.

One failure was due to the fact that the patient was in the second stage when treatment was started, and the other was a neurotic patient who was excited by the drug instead of being quieted.

There were no foetal deaths; 7 of the babies cried spontaneously at birth; 3 were drowsy but needed no artificial resuscitation; 2 were asphyxiated—one of the latter recovered in five minutes and the other in fifteen minutes. This last case was a right occipitoposterior position in which a mid-high forceps application was used with the Scanzoni technique, under ether anæsthesia.

The average duration of labor in primiparæ was eighteen hours, under the drug ten hours; in multiparæ fourteen hours, under the drug seven hours. There were 3 forceps cases; 1 mid-high and 2 low with the head on the perineum. The author suggests that in the future pituitrin be used instead of low forceps.

EUGENE CARY.

PUERPERIUM AND ITS COMPLICATIONS

Bollag, K.: Spontaneous Endogenous Puerperal Infection (Zur Frage der unverschuldeten endogenen puerperalen Spontaninfektion). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xli, 474.

There has been much discussion as to whether autogenous infection of parturients is possible. Naturally it is difficult to get decisive evidence on the subject, but Bollag reports the case of a healthy woman of 35 who was spontaneously delivered of a normal child at term. No internal examination had been made. Fever developed on the fourth day and the woman died a month later of streptococcic sepsis. The most careful examination was made, but no focus was found from which the streptococci could have invaded the genital tract. The primary trouble was doubtless streptococcic thrombosis of the internal genital organs. This is the first time in 23,516 deliveries that there has been an undoubted case of endogenous puerperal infection, but it is sufficient to prove that there is such a thing as spontaneous puerperal infection causing death, though it is, fortunately, very rare. A. Goss.

Jones, W. C.: Reports of Two Cases of Post-Partum Inversion of the Uterus; Discussion of the Pathogenesis of Obstetrical Inversion. *Chicago M. Rec.*, 1915, xxxvii, 348.

The author reports two cases of post-partum inversion of the uterus in primiparæ, resulting in the death of both patients. In consideration of these cases and a review of the literature he offers the following conclusions:

1. A predisposing cause of obstetric inversion is uterine inertia. The two chief exciting causes are funic traction and fundal pressure.

2. More than half of all obstetric inversions are spontaneous.

3. Most, if not all, inversions begin at the fundus.

4. Reduction of obstetric inversion usually is accomplished most easily by beginning at the cervix. If the uterus is firmly contracted it is safer to delay reduction for a few hours on account of shock; but if relaxation is marked, immediate reposition is indicated.

5. In certain cases of inversion in which the cervix ascends high into the abdomen care must be taken not to mistake the cervix for the fundus.

6. The placenta favors inversion by causing less marked mural hypertrophy in the area of placental implantation, by traction due to its mere weight, by adherence caused through uterine relaxation, and by its location—the nearer it is to the fundus the more likely it is to cause inversion.

7. Primiparæ are predisposed to inversion more than multiparæ, chiefly on account of the higher insertion of the placenta in the former. The great vigor of the uterine muscle in the first labor may also be a factor in favoring automatic inversion.

W. D. PHILLIPS.

MISCELLANEOUS

Kolmer, J. A., and Williams, P. F.: Serum Studies in Pregnancy. *Am. J. Obst.*, N. Y., 1915, lxxi, 899.

The authors summarize their experiments as follows:

1. A placentin, No. 1, prepared by concentration of expressed placental juice, preserved with 1 per cent glycerine and 0.5 per cent tricresol, injected intracutaneously yielded skin reactions characterized by erythema, infiltration, and pain in 87 per cent of pregnant and recently delivered women, and in 66 per cent of women who had borne children, but who were not pregnant at the time these tests were made. This extract also caused 20 per cent of the men to react slightly.

2. When diluted 1:10 with normal salt solution this extract yielded 80 per cent positive reactions among pregnant or recently delivered women, and 50 per cent positive among women who had borne children.

3. A placentin, No. 4, prepared in the same manner as the first extract except that glycerine was not used in its preparation or preservation, yielded

40 per cent positive reactions among pregnant or recently delivered women, and 14 per cent positive reactions among women who had borne children. It is probable that glycerine itself acts as an irritant, especially in the hypersensitive skin of the pregnant woman.

4. A placentin, No. 2, prepared from the residue resulting from the concentration of expressed placental juice, yielded 55 per cent positive reactions among women who were pregnant or recently delivered. This placentin produced slightly positive results in 20 per cent of the men tested.

5. A glycerine extract of placentin, No. 5, upon cutaneous inoculation yielded 50 per cent positive reactions among pregnant and recently pregnant women. Of several multiparous and nulliparous women tested, all reacted negatively.

6. Extracts of human male and female kidney (nephrens), prepared in the same manner as the placentins, produced a number of positive reactions among pregnant, puerperal, multiparous, and nulliparous women. The most marked reactions were observed with the extract of human female kidney.

7. The intracutaneous injection of a 1 per cent solution of a placental peptone did not produce reactions among pregnant and recently delivered women.

From their experiments the authors believe that during pregnancy there is an increase of a general proteolytic ferment rather than the production of a ferment specific for placental protein alone. At present it may be stated that these "ferments" have several of the characters of amboceptors and their lack of specificity is comparable to the lack of specificity of cytotoxins in general. The authors do not believe at present that the skin reaction possesses a practical value in diagnosis, certainly not among women who have borne children.

C. H. DAVIS.

Irving, F. C.: The Tarnier Axis Traction Rods Applied to the Simpson Obstetric Forceps.
Surg., Gynec. & Obst., 1915, xx, 734.

The instrument described is the long Simpson forceps armed with a detachable traction device based on that of Tarnier, having a generous perineal curve and three swivel joints.

Two flat traction rods are carried on the under surface of the shanks of the forceps and are held in place by knob-headed retaining pins. If the operator wishes to apply axis traction he releases the rods by gentle pressure upon the heads of the pins and inserts each one into the outer side of each arm of a Y-shaped traction attachment, which is slotted to receive it. Each traction rod carries on its inner edge two tenons, which fit into two corresponding mortises on the outer aspect of the Y-shaped attachment. These rods are held in place by sliding collars. At the outer end of the Y-shaped attachment is the conventional drop-handle and swivel joints of Tarnier.

Bacon, C. S.: Infant Mortality Due to Labor.
J. Am. M. Ass., 1915, lxiv, 2048.

One of the important phases of this subject is an obstetric problem. Infant mortality during labor and due chiefly to labor is very high. The accidents of labor which destroy the foetus, causing stillbirth, or those which injure it so that the infant dies shortly after birth, are many. A study of these accidents involves a review of many obstetric problems. The most important questions of dystocia are discussed in a way that should lead to valuable suggestions for practice.

The following figures show approximately the number of deaths each year due to labor: for the United States, 65,000 stillbirths and 15,000 deaths subsequent to birth, or 80,000; in Illinois 5,000 and in Chicago 2,000. This gives a foetal mortality due to labor of 3½ per cent.

The following table expresses the approximate infant mortality from the causes given:

	Per cent
Malpresentation.....	30
Forceps operations.....	30
Miscellaneous causes, including placenta prævia, ablatio placente, ruptured uterus, toxæmia, etc.....	15
Pathologic uterine contractions.....	25

The author calls special attention to the last cause and attempts to justify ascribing so much importance to it. The danger of abnormal uterine contractions is not, as a rule, sufficiently recognized. Before labor begins, the oxygenation of the foetal blood occurs in the placenta. A continuous and abundant circulation of the maternal blood furnishes the oxygen and removes the waste from the foetal blood. When the uterine contractions begin, the maternal circulation is disturbed. So long as the contractions last only a short time and are separated by considerable intervals of relaxation there is no appreciable disturbance to the foetus. The main index of the foetal condition is its circulation, or heart-tones. The frequency of the heart-tones changes but little or not at all during the early contractions of labor. When the contractions last longer and occur more frequently, there is more disturbance in the placental circulation and more derangement in the foetal circulation. If the contractions last more than one and one-half minutes, and if the intervals between contractions are shorter than the contractions themselves, the condition is pathologic and dangerous. If the contractions become more frequent and prolonged so that there is hardly any interval, there arises a condition called tetany uteri, which almost always results in foetal death.

Such excessive contractions may occur in labor, but they generally come on later. They are often the reaction of the uterus to obstacles to delivery and so occur in contracted pelvis, bad presentations, etc. They are excited by operative interference.

The management of excessive contractions to prevent foetal death is to control the contractions. The best means is the hypodermic injection of morphine, and anæsthesia. One-fourth grain of

morphine is generally sufficient in the first stage of labor. If necessary, this dose could be repeated, for at this time there is little danger of morphine affecting the child. In the second stage, ether may well be combined with morphine or substituted for it. Should the obstacle to delivery that excites the excessive uterine contractions be at the obstetric outlet, that is, should the head be on the perineum and held back by a tense, unyielding vulvar ring, episiotomy should be done. If the head is not at the vulva but down in the pelvis and the cervix is well dilated, and if, in spite of morphine and anæsthesia, the danger to the child is great, forceps may be applied. As a rule, however, forceps will increase the danger of foetal asphyxiation and should not be used unless an easy and quick extraction is possible.

EDWARD L. CORNELL.

Robertson, T. B.: The Fortuitous Origin of Departures from the Normal Period of Gestation in Man. *Am. J. Obst.*, N. Y., 1915, lxxi, 916.

After a technical discussion of his investigations, Robertson gives the following summary:

From a statistical investigation of 511 normal confinements of South Australian females, comprising 247 confinements yielding male infants and 264 confinements yielding female infants, the conclusions are as follows:

1. The mean length of periods of gestation yielding males is 282.5 days with a probable error of ± 0.55 days and a variability of 4.47 per cent.

2. The mean length of periods of gestation yielding females is 284.5 days with a probable error of ± 0.57 days and a variability of 4.85 per cent.

3. The probabilities of the truth of the conclusion, based upon the above estimates, that the periods of gestation yielding females are longer than those yielding males, are 142 to 1.

4. There is only one period, the "normal" period, at which the percentage of infants delivered by normal mothers attains a maximum. Subsequently to a very early period in the development of the foetus, there is no evidence of a critical period in the intra-uterine growth of man such as occurs in the intra-uterine growth of guinea pigs.

5. The deviation of normal periods from the mean are fortuitous in origin.

6. The chances are a million to one against a male child being delivered at the termination of an otherwise normal pregnancy before 224 days or of a female child before 222 days after the onset of the last menstruation. Hence all seven-month children (210 days) may legitimately be regarded as the fruit of pathological pregnancies.

7. The length of the period of gestation is very much less variable in normal females, than the weight of the infant which is delivered. From this

fact it is inferred that the length of the period of gestation in normal females is primarily determined, not by the foetal development, but by a maternal cycle of events which is to a considerable extent independent of the stage of development attained by the foetus.

C. H. DAVIS.

Stroud, J. B.: Some Unusual Cases of Obstetrics. *Lancet-Clin.*, 1915, cxiii, 688.

Stroud records the following cases of obstetric abnormalities:

1. The first case was post-partum hæmorrhage in a woman who was confined at 6:30 p. m. and was found at 8:30 p. m. unconscious, pulseless, the bedding soaked with blood. Pituitrin was administered, the uterus emptied of blood-clots, and forced contraction administered bimanually. After being given 40 drops of fluid extract of ergot, the patient recovered.

2. The second was a case of complete placenta prævia, in a woman eight months pregnant, who had had hæmorrhage for two months. The cervix was dilated sufficiently to admit two fingers. The placenta presenting no margins, the fingers were forced through releasing the fluid; the head plugging the opening stopped the hæmorrhage. The child was stillborn. The mother's recovery was uneventful.

3. Two cases of marginal placenta prævia were brought to a climax at the seventh month. Both cases had been having hæmorrhage for two weeks and had sudden terrific hæmorrhages, the cervix not being dilated. They were delivered under anæsthesia; both did well.

4. Two cases of face presentation were delivered uneventfully.

5. This case was a monstrosity born to a IV-para. There was foot presentation, and the pains were good. Traction was made and forceps applied to the hips to no avail. Version was done, but delivery was impossible. A diagnosis was made of infantile ascites, and the abdomen was punctured and a gallon of fluid drawn off. A stillborn child was delivered in two minutes. Its arms and legs were short; it had no joints at the elbows and knees; it had six fingers and toes one-fourth inch long; its sexual organs were poorly developed; it had a cleft palate. The mother's recovery was uneventful.

6. In a case of eclampsia version was attempted, the hand and cord obstructing delivery. The child was stillborn, the mother recovered.

7. A girl of 14 had headache and repeated convulsions. Chloroform was administered and a child delivered. Morphine was subsequently used. The author uses morphine as he considers *veratrum viride* not safe. Chloral and bromides are also efficient.

H. G. GARWOOD.

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

Friedman, G. A.: The Influence of Removal of the Adrenals and One-Sided Thyroidectomy upon the Gastric and Duodenal Mucosa: the Experimental Production of Lesions, Erosions, and Acute Ulcers. *J. Med. Research*, 1915, xxxii, 287.

The scope of this work consisted of the following experiments:

1. Extirpation of the adrenals in rabbits and in dogs.
2. Extirpation of the adrenal on one side and removal of a thyroid lobe on the same side or the opposite (in one sitting) in rabbits.
3. One-sided thyroidectomy in rabbits and dogs.
4. Repeated intravenous injections of commercial thyroid gland.

The results of the experiments presented in this communication, and in a previous one (abstracted in a former issue) may be summed up as follows:

1. Adrenal hypofunction causes lesions in the stomach in rabbits and dogs.
2. An excess of thyroid gland, as produced by repeated intravenous injections, was probably responsible for the gastric lesions of two dogs and of one rabbit of four animals experimented upon.
3. Thyroid hypofunction caused the appearance of duodenal lesions in five animals out of six.
4. An excess of adrenalin, produced by repeated injections of the drug, led to the appearance of lesions in the duodenum of dogs.
5. The simultaneous production of adrenal and thyroid hypofunction did not lead to any lesions in the stomach, nor in the duodenum in rabbits.
6. When after removal of one adrenal the other became hypertrophied, lesions were seen in both viscera of three rabbits and in the duodenum of one.

From the author's experiments it seems probable that gastric lesions might be dependent upon adrenal insufficiency as well as upon an excess of thyroid gland; duodenal lesions on the contrary upon thyroid hypofunction as well as upon excess of adrenalin. Gastric and duodenal lesions might be dependent upon the alternating effect of adrenal hypo- and hyperfunction. **GEORGE E. BEILBY.**

O'Farrell, T. T.: Adenocarcinoma (Mesothelioma) of the Kidney. *Med. Press & Circ.*, 1915, cl, 614.

The author reports a tumor of the kidney with the above diagnosis, the patient being a girl 6 years of age. He reviews the factors to be considered in arriving at a diagnosis of kidney tumor, and Adami's classification of tumors is given in tabular form, a special description being given of two groups, teratoblastoma and mesothelial blastoma.

The tumor reported is a member of the latter group, as its cells all conform to a single type. While the microscopic appearance suggests the diagnosis "adenocarcinoma," mesothelioma is the better term, since the tumor springs from the mesoblastic tissues of the kidney, and such tumors, as pointed out by Adami, often have cells of an embryonic appearance, which when of slow growth simulate epithelial cells with an acinous arrangement; when the growth is more rapid the appearance is that of sarcoma. **S. W. MOORHEAD.**

Copeland, E. P.: Cases of Pyelitis in the Young. *Virg. M. Semi-Month.*, 1915, xx, 140.

The author states that the recognition of this disease requires no special astuteness on the part of the physician, and he urges that the examination of the urine be made a part of the routine examination of every patient with fever, if not indeed with every patient. No doubt the difficulty of securing the necessary specimen, especially in the female, in which sex the vast majority of cases occur, has much to do with the omission of the most important part of the investigation. He cites 3 cases. The first case, a white female, aged one year, seems to have been an extension of infection from the vulva. The second case, a white female, aged 19 months, was due to an extension from the discharges incident to a gastro-intestinal attack. The third case, a white female, aged 4 years, was probably a direct infection from the intestine in a child with greatly lowered resistance.

A catheterized specimen in all cases showed countless pus-cells in the urine. In the treatment of these cases no attempt was made to urge food upon them. They were kept at absolute rest in bed and, with the exception of being given water when possible and the necessary medicine, they were left alone. The medication consisted in the use of potassium acetate, 30 grains daily, continued over a period of 48 hours, hexamethylenamine, 20 grains a day, over the same period, and a repetition of the cycles until the clinical symptoms disappeared.

C. R. O'CROWLEY.

Watson, J. H.: Ureteral Stone, with Special Reference to Those in the Pelvic Ureter. *Brit. M. J.*, 1915, i, 993.

Watson recommends for the recognition of ureteral calculi a routine examination, utilizing the simpler methods first, consisting consecutively of (1) history, (2) general examination, (3) examination of the urine, (4) radiography, (5) cystoscopy. Interesting in this connection is the author's statement that ureteral catheterization with wax-tipped

bougies is a questionable refinement which is only available in women. By carrying out the examination in this sequence many complicated conditions which formerly were only suspected may be cleared up so that by the time the patient arrives in the operating theater, the surgeon has every detail at his disposal whereby he can arrange his operation with every prospect of success.

The general effects of ureteral calculi may be due to (1) mechanical obstruction, (2) infection (pyelitis, pyelonephritis, pyonephrosis), (3) secondary effects on the nervous system, (4) local effects on the ureter (mechanical and inflammatory).

The similarity of the referred pain in stone of the ureter to the predominant symptom of stone in the bladder can be explained on the basis of the nerve supply of the ureter which is chiefly composed of an anastomosis of sympathetic fibers in the outer and muscular coats of the ureter and which is derived from various plexus lying in relation to it. The nerves reaching the ureter come from the last dorsal, upper lumbar, and sacral segments via these plexus. Strong afferent impulse to the cord will set in play, by over-stimulation, one or other nerves of the lumbar or sacral plexus, according to the segment most involved, bringing about a visceromotor and viscerosensory reflex, resulting in increased muscular rigidity and painful sensibility to the referred area.

In a similar manner can be explained the pain at the end of the penis in the presence of ureteral stone, since the constitution of the vesical plexus is responsible for the innervation of the lower ureter. The vesical plexus is formed by nerve-fibers from the upper lumbar segments via the hypogastric plexus and from the upper sacral segments via the pelvic plexus, which are intercommunicating. By intense stimulation of the visceral nerves, due to ureteric contractions, an irritable focus is produced in the cord, involving especially the part from which the dorsal nerve of the penis originates; namely, the second and third sacral and causing a true viscerosensory reflex.

Regarding the operative treatment of ureteral calculi Watson emphasizes the difficulty of the surgery of the lower ureter, citing two observations of his own, and recommends for this class of cases the routine employment of less hazardous procedures, as presented by the operative cystoscope.

M. KROTOSZYNER.

BLADDER, URETHRA, AND PENIS

Blackburn, A. E., and Cook, W. W.: Fracture of the Pelvis, with Extraperitoneal Rupture of the Bladder. *Lancet*, Lond., 1915, clxxxviii, 1132.

The authors report a unique, interesting, and instructive case of pelvic fracture with accompanying bladder injury.

The injury came from an unaccountably slight injury, the man, a horse-dealer, leaping astride a horse bareback, in no way different from his usual custom. There was no jar or jolt. Immediately

he became disabled and examination showed a fracture and accompanying separation in the ramus of the left pubic bone more than six inches in width. The bladder was torn extraperitoneally sufficiently to admit the entire hand. No suturing of the bladder was attempted, and in the end recovery was complete in every way, apparently the bladder function being normal. A Trendelenburg splint was used to bring the broken bones together, this means having recently been suggested by some French genito-urinary surgeon. Immediately on reduction by this means all the severe subjective symptoms became minimized. The slight force, the extensive damage, permitting the bladder to go without suturing, and excellent results, surely make an unusual combination.

F. R. CHARLTON.

Barnett, C. E.: An Unusual Bladder Tumor (Carcinoma). *Urol. & Cutan. Rev.*, 1915, xix, 321.

Barnett reports the case of a woman, 56 years old, who was troubled with hæmaturia and distressing pain in the bladder. She weighed 200 pounds and was intensely nervous. Her trouble began five months previous to the time Barnett saw her. Her history revealed nothing striking. Cystoscopy showed a bladder growth but bleeding was so profuse that no positive statement could be made. The author was suspicious of tuberculous kidney in spite of finding the vesical tumor. Tuberculin skin reaction was positive.

A subsequent cystoscopy showed the tumor perfectly, the size and shape of a hulled walnut, directly behind the symphysis or occupying edges of the roof toward the left center on a line opposite to the left ureteric ostium. The diagnosis was papillary cancer.

At operation, upon opening the peritoneum, Barnett found an extension of carcinoma through the anterior wall of the uterus directly into the bladder and extending up to the anterior abdominal parietes; posteriorly there was an advancement of the carcinoma into a mass of ileum and sigmoid; laterally the uterus was free from adhesion. No attempt was made at removal.

H. W. E. WALTHER.

Schapira, W. S.: Gummatous Ulceration of the Bladder. *Am. J. Surg.*, 1915, xxix, 213.

The author reports an interesting case of this condition in a man 46 years old, whose primary infection was acquired 17 years before. Owing to insufficient treatment, skin manifestations having appeared, in 1912 he received five injections of salvarsan. Two years later he consulted the author for severe cystitis, the urine being very foul and purulent and the patient in poor condition. The Wassermann test was negative. The author made the diagnosis of ulceration and gumma of the bladder owing to the presence of an ulcerated patch with infiltrated edges and ragged base on the left side of the bladder below the ureter, smaller ulcers to the right of it and a white glistening mass on the

left. An intravenous salvarsan injection was given and a week later the Wassermann test was strongly positive.

The treatment carried out was curetting and cauterization of the ulcerations with the operating cystoscope, drainage by catheter for ten days, mercurial injections and inunctions for two weeks, followed by potassium iodide.

The symptoms were much improved at the end of a month and cystoscopic examination showed no ulcerations or tumor. A month later the Wassermann test was negative, the patient was in perfect health and had gained 15 pounds. The author calls attention to the following points:

1. The long delayed appearance of syphilitic ulceration in the bladder after the initial lesion.
2. The negative Wassermann reaction turning to positive after the injection of salvarsan.
3. The quick response to antisiphilitic treatment.

HORACE BINNEY.

GENITAL ORGANS

Cooke, J. V.: Chorio-Epithelioma of the Testicle. *Bull. Johns Hopkins Hosp.*, 1915, xxvi, 215.

The author finds 46 cases of this tumor recorded, the nature of which was first recognized by Schalgenhauer in 1902. He reports the following case:

A man 26 years of age, with negative past history, had been ill for five days with cramp-like abdominal pain and vomiting of brownish-red material, severe headache, and partial loss of vision. On admission to the hospital he was semistuporous. There was a round, firm tumor of the right testis, dull to percussion and opaque. There was also slight hypertrophy of the breasts. The stupor, pain, and vomiting at intervals continued, death occurring the third day after entrance to the hospital. Autopsy showed a chorio-epithelioma of the right testis with metastases to the brain, liver, kidneys, stomach, peritoneum, and thyroid. A study of these 47 cases brings out the following points:

The majority of cases occurred between the ages of 20 and 46; the proportion of involvement of left over right was 6 to 5; the duration was from two months to two and one-half years. Only one case is known to be well five months after operation; in 17 the results of the operation were not given; the remainder were fatal. The symptoms are those of a rapidly growing malignant testicular tumor. In two cases hypertrophy of the breasts with secretion of a colostrum-like fluid were noted.

The microscopic character of the tumor is its composition of large, faintly staining, polygonal cells of the Langhans type, and, among these, multinucleated islands of syncytium are scattered. In some cases, teratoblastomatous elements are found. The metastases are similar in structure to the original tumor.

The mammary hypertrophy is theoretically explained by the presence of a substance, like a placental hormone, occurring in the tumor.

A considerable portion of the article is devoted to the various theories which have been advanced to explain the embryology and pathogenesis of the disease.

HORACE BINNEY.

Asch, J. J.: Acute Gonorrhœal Epididymitis and Its Treatment. *Am. J. Surg.*, 1915, xxix, 200.

The author treats acute gonorrhœal epididymitis in the following way: The scrotum over the epididymis is painted with tincture of iodine. Two to 6 ccm. of a sterile 2 per cent novocaine solution is injected into the inflamed epididymis, a very fine needle being used. The needle is inserted into the skin but once, and a number of different times into the epididymis. This produces slight momentary pain, which ceases as soon as the fluid enters the epididymis. All pain disappears at the end of a few hours, and patients are generally able to return to work immediately. The temperature returns to normal within forty-eight hours. Aside from a suspensory, no other treatment is used.

The author believes that this is much preferable to any of the older recognized treatments; and that in cases in which the tail of the epididymis alone is involved, the epididymitis is aborted.

B. S. BARRINGER.

Jost, W. E.: The Surgical Treatment of Seminal Vesiculitis. *Med. Fortnightly*, 1915, xlvii, 141.

Jost reports the uniformly successful cure of 9 cases of chronic seminal vesiculitis by vasostomy and the injection of 10 per cent argyrol. The diagnosis was based upon rectal palpation and the microscopical examination of the vesicular contents obtained "only after the urethra had been thoroughly irrigated and the prostate emptied." The bladder was then re-distended and the contents of the vesicles massaged out by moderate pressure from above downward.

The operative technique consists in exposing the vas through a small incision at a place corresponding to the high varicocele incision under local anæsthesia. It is separated from other structures of the cord and a small incision made into it. Through this opening the cannula of a syringe is introduced and 2 ccm. of a 10 per cent solution of argyrol are injected into the seminal vesicles. The tissue of the cord is then stitched to the scrotum and a strand of black silk-worm gut inserted into the opening in the vas. The injections are made daily for five days.

FRANK HINMAN.

Gunn, L. G.: Carcinoma of the Prostate. *Am. J. Urol.*, 1915, xi, 243.

The three points to which Gunn directs attention are: (1) its relative and increasing frequency; (2) its relation to the hypertrophied prostate; and (3) its diagnosis. Sarcoma of the prostate he considers rare. He reviews the collected statistics from the earliest (Tanchou, 1830 to 1840) up to the latest period (Young, 1912).

Albarran in 1906 found 10 carcinomatous pros-

tates among 100 patients supposed to be suffering with hypertrophy of that organ. Lewisohn in 1909 reported 18 cancers in 147 prostatic cases. Young in 1912, 42 in 400 cases. Gunn himself proved 17 prostates out of 133 cases to be carcinomatous.

The author recognizes 4 clinical types of the prostate gland: (1) the small, firm, fibrous prostate; (2) the large, elastic prostate; (3) the lumpy, irregular prostate; and (4) the carcinomatous prostate. Gunn goes extensively into the theories as to whether the enlargement in prostates is a hypertrophy, is inflammatory, or is tumor formation.

The three points that might help in making an early diagnosis are: (1) the occurrence of pain without obvious retention of urine; (2) a disproportion between the symptoms complained of and the condition found on rectal examination; and (3) the rapid onset of symptoms, progressing as far in six months as an average case would in two or three years. For this type of case he is an advocate of the radical operation. H. W. E. WALTHER.

Casper, L.: Hypertrophy of the Prostate and Tumors of the Prostate (Prostatahypertrophie und Prostatatumoren). *Med. Klin.*, Berl., 1915, xi, 633.

Casper demonstrated two cases; one a man of 62 with hypertrophy of the prostate, the other a man of 65 with cancer of the prostate, and compared the symptoms in the two conditions. The disease began in both cases with tenesmus and pain, both showing remissions at first under treatment. Both patients suffered a decline in general health; in both there was pus in the urine with colon bacilli.

In the patient with hypertrophy the decline in general health was temporary; when the bladder was emptied and cleansed he regained appetite and weight, the condition of the urine improved, and the tenesmus and pain disappeared.

The patient with cancer grew gradually worse; irrigation of the bladder had practically no effect, and it required increasing doses of morphine to control the tenesmus and pain. Palpation in the hypertrophy case showed the organ to be smooth, soft, and movable, while the cancer was hard, nodular, and showed projections connecting with masses in the pelvis. There was some difficulty in introducing a catheter into the bladder in the hypertrophy case, but it was almost impossible in the cancer case. This distinction does not always hold good, however, for in some cases of hypertrophy it is almost impossible to introduce an instrument on account of the large size of the gland. There was no hæmorrhage in either of these cases, but there is apt to be quite profuse bleeding in hypertrophy; while in cancer there is little or none. The treatment of cancer of the prostate is practically hopeless. Casper has never seen a case recover, either with or without operation. He has been greatly disappointed in the results of röntgen and radium treatment, for he finds that they

have no effect, except a slight subjective improvement that might be brought about by any new form of treatment. The pain may be relieved by a permanent suprapubic fistula.

In both cancer and hypertrophy the urinary retention may be relieved by catheterization. Of course there is always the possibility of infection, but this may be guarded against in great measure by the strictest asepsis, and many patients live comfortably for many years with daily catheterization. Catheterization need not be begun till there is more than 300 gms. of residual urine, unless the bladder is unusually small.

Suprapubic prostatectomy is the best operation for hypertrophy of the prostate when operation becomes necessary, but Casper advises operation only for strict indications, for the operative mortality varies from 5 to 20 per cent. As the patients are generally old men with arteriosclerosis it is difficult to avoid a considerable number of fatalities. Operation is indicated only when conservative methods of treatment do not relieve the tenesmus, and it is impossible for the patient to rest at night; or when catheterization is impossible or extremely difficult, so that the danger of infection is increased. Repeated hæmorrhage and repeated formation of vesical calculi may also furnish indications for operation. Radium and röntgen treatment are ineffective in hypertrophy of the prostate also.

A. Goss.

Balch, F. G.: A Report of Some Cases of Perineal Prostatectomy. *Boston M. & S. J.*, 1915, clxxii, 507.

Balch obtained good results by perineal prostatectomy where anæsthesia was produced by intraspinal injection of tropococaine. The patients could eat and drink immediately after operation. They had none of the untoward symptoms usually accompanying the use of ether anæsthesia in men with very atheromatous vessels or in those suffering from irritation of the bronchial mucous membrane.

In all his cases he used the V-incision with the point in front. He prefers this method of approach to the central incision, because he believes that by cutting off the raphé and pulling the bulb forward he can secure an additional space of about one-half an inch, so that a finger can be inserted. He makes no wide dissection of the base of the bladder, but opens the membranous urethra on a sound, and, pushing a finger forward through the prostatic urethra into the bladder, examines the prostate thoroughly. He then breaks through on the floor of the prostatic urethra, enucleates first the lobe on one side and then the lobe on the other. By this procedure he has very little trouble to get the whole prostate. He uses a drainage tube which he fastens with a suture into the skin holding it over into one angle of the incision and brings the raphé into position again with buried chromic catgut sutures. He also uses a cigarette wick in the other angle of the incision.

After being returned to the ward the patients are

put on a treatment of constant irrigation from twelve to twenty-four hours, after which the wick is removed a few hours before the tube. The most advantageous feature of this technique is the lack of hæmorrhage. Patients are up in a chair from one to four days after operation, and urine comes through the penis in from two to fourteen days. A preliminary cystoscopy is necessary, because in cases with diverticula and bladder tumors the operation must be performed by the suprapubic route. J. RADDA.

Packard, H.: Prostatic Surgery in the Light of Recent Progress. *Surg., Gynec. & Obst.*, 1915, xx, 725.

The early years of prostatic surgery were unsatisfactory because bladders were frequently septic from the establishment of the catheter habit. A great change has come about as a result of publicity and the urging upon the general practitioner of the necessity of operation while the patient's bladder is still clean. A prostatectomy performed at the time of election, namely, before cystitis has occurred, before atony of the bladder has taken place, and while the patient's general vitality is still good, is, under modern methods, a simple and safe operation and ranks with the best of surgery.

The question of route has been discussed so widely that no further comments are necessary. The question, if one still remains, is rapidly settling itself, for 99 per cent of prostatectomies, the world over, are now performed by the suprapubic route. In Europe the suprapubic route is generally used, but a few American surgeons still exploit the perineal route. The advantages of the suprapubic over the perineal are:

1. Ultimate perfect healing of the wound.
 2. Continence and control of urinary flow.
 3. Preservation and safety of important anatomical structures (rectum, perineal muscles, membrane urethra, seminal ducts).
 4. The operation is soon over — not over eight or ten minutes — with correspondingly little shock to the patient.
 5. But little is required in the way of anaesthesia and there is a corresponding absence of post-anaesthesia disturbance.
 6. The control of hæmorrhage is easy through massage of the floor of the bladder.
 7. Accessibility of wound for after-care and preservation of sepsis. (It has been the experience of the author that female nurses are diffident about caring for prostatectomy cases, therefore the after-care, as far as hospital nursing is concerned, falls largely into the hands of the orderly, who at best is not well trained for accurate, careful, skillful nursing.)
- Hæmorrhage after prostatectomy is prevented by massage of the floor of the bladder and about the margin of the prostatic wound. This is accomplished with one finger in the rectum and one finger deep in the bladder with massage-like pressure for a few moments all over and about the tissues involved in

the enucleation. Cases which are clean at the time of the operation remain clean through convalescence if the operation be performed in a strictly aseptic manner. The forefinger which does the enucleation should be covered with a sterile rubber glove. Scissors or other instruments for breaking away through the bladder mucous membrane for beginning enucleation are unnecessary. At the anterior commissure of the prostatic collar a vulnerable point exists which breaks down at once under moderate finger-pressure and from this, enucleation rapidly proceeds right and left by insinuating the finger between the capsule and sheaf. Gas and oxygen anaesthesia, supplemented by a very little ether vapor, gives the best results. Spinal anaesthesia is very good if everything goes well but now and then fails to produce the desired complete anaesthesia, and may be a menace to the patient if the case turns out to be one in which the Trendelenburg posture is desirable.

MISCELLANEOUS

Harris, S. H.: Some Observations on the Diagnosis and Surgical Treatment of Pyuria. *Med. J. Austral.*, 1915, i, 573.

Harris discusses the use and advantages of the operating cystoscope, especially in the removal of small calculi from the lower end of the ureter. He advocates ureteric meatotomy as an easy and comparatively simple way of extracting such calculi, but does not mention any after-effects, if there are such, such as stricture of the ureteric orifice.

Harris is quite insistent upon the necessity of free and prolonged drainage of an infected kidney. He does this by means of a large ureteral catheter, No. 11 F., and says he has retained this catheter in the kidney for as long as fourteen days. Several case reports illustrate the points brought out in the paper.

J. DELLINGER BARNEY.

Hyman, A.: The Application of Modern Urological Methods in the Diagnosis of Surgical Conditions of the Urinary Tract. *Am. J. Surg.*, 1915, xxix, 204.

The author describes modern urological methods as used at the Mt. Sinai Hospital. Röntgenography is part of the routine examination of every patient in whom there is even a suspicion of a urological condition.

Röntgen rays will show renal calculi in probably 98 per cent of cases. In cases where stones do not show up, but are suggested, pyelography is employed. In pyelography, 15 per cent argyrol or collargol is injected with a syringe, not by the gravity method. In testing the functional capacity of the kidneys at this hospital, they rely almost entirely on indigo-carmin.

Ureteral calculi are much more difficult to diagnose than renal. Radiographs with a lead catheter or ureteral pyelograph usually disclose the stone. The author believes that the ureteral catheter will

encounter distinct obstruction in 75 per cent of all ureteral stones.

He also uses the wax-tipped catheter. The röntgenogram demonstrates one of the following changes:

1. Dilatation of the ureter at the site of or above the obstruction.
2. The dilatation may be diffuse, involving the entire course of the ureter above the obstruction.
3. The absence of silver above the röntgen-ray shadow, combined with its presence below, may be considered absolute proof of the intra-ureteral obstruction.

In the diagnosis of tuberculosis of the renal tract, the author especially emphasizes the value of tuberculin injections as an aid to diagnosis; but he says that a general minus a focal response is of no practical value, as a most careful examination cannot exclude tuberculosis in other parts, which may give the general reaction. B. S. BARRINGER.

Moorhead, S. W.: Improved Battery for Cystoscopy. *Am. J. Urol.*, 1915, xi, 184.

By means of an ammeter attached to a dry cell battery the author attempts to overcome some of the limitations of the ordinary dry cell battery, the usefulness of which is manifested particularly in its portability and freedom from shock-giving proclivities. These advantages are often offset by two disadvantages: (1) the cells require renewal at not very great intervals, and (2) the decrease in current is sometimes so rapid that it is not possible to complete an examination of the bladder without altering the resistance in the rheostat. This the author believes he has overcome by attaching an ammeter to the storage battery, so that one is in a position to know just how much current is required for illumination. If, during the examination, the illumination becomes unsatisfactory a glance at the dial indicates whether the fault lies with the electric supply or whether it is to be sought in other directions. H. L. KRETSCHMER.

Pedersen, V. C.: Urinary Lithiasis. *N. Y. M. J.*, 1915, ci, 933.

The author reports details of cystoscopic and röntgenologic examinations and the operative findings in several cases selected from his clinic during 1914, discussing their points of special interest.

The first case, a boy aged 16, with a diagnosis of multiple vesical calculi, presented peculiarities in the long duration of symptoms and the youth of the patient, the presence of three large calculi producing comparatively little disturbance of the bladder. Litholapaxy was done under ether and recovery without lesion took place. The patient was advised to have subsequent cystoscopic examinations, to abstain from alcohol and to restrict his diet in an endeavor to prevent re-formation of stones.

The second case, a man, aged 22, with a diagnosis of ureteral stone, presented the incidental obser-

vance of the transit of a stone from nearly the pelvic brim to the mouth of the ureter. There was a severe, almost sloughing condition of the right ureteral opening during the actual delivery of the stone, but the case was marked by absence of ureteral and urethral colic during the final stages of transit, the absence of classic symptoms of stone in the bladder and, finally, by a pulsation of the bladder floor during and after the exit of the stone from the ureter.

In the third case, a man aged 58, a diagnosis was made of vesical lithiasis secondary to ureteral lithiasis. The interest in this case rests on a history of 37 years. The ureteral catheter passed the stone during the functional test, the stone being automatically delivered into the bladder without great disturbance to the patient. A large fragment of the stone was caught among the trabeculations of the bladder.

In the fourth case, a woman aged 37, a diagnosis was made of multiple renal calculi. In this case two well marked stones in the left kidney were well borne, with little disturbance to the organ or its function. One of the stones was turned on its axis by the passage of the X-ray catheter beyond it. The case was marked by a very brief history, severe subjective symptoms and slight objective symptoms.

In the fifth case, a man aged 36, a provisional diagnosis of vesical tumor was made; the final diagnosis was vesical stones. The history was of only three weeks' duration. There was an apparent absence of ureteral symptoms but vesical signs were prominent. The stone was removed with the operation cystoscope, followed by uninterrupted convalescence and the discharge of the patient the day after operation, showing how insignificant is the result of such an operation on the bladder, the urethra, and the patient.

In the sixth case, a man aged 27, a provisional diagnosis was made of eczema of the lip; the final diagnosis was vesical lithiasis. Although the patient presented himself for a mild skin infection of the lip, in obtaining the history it was found that he had radiating pain in the right abdomen; pronounced ardor urinæ at times; the bladder felt empty after urination; there was no tenesmus present. A very peculiar feature in this case consisted in numerous phosphatic calculi which rolled about the bladder under movements of respiration or with the irrigating fluid without obvious irritation to the organ. At the time of the report calculi were still being produced in large numbers. The microscope disclosed nothing of pathological importance. Sugar in the urine was the only element of disease. The case had not returned for operation when reported.

In the seventh case, a man aged 49, a provisional diagnosis of hæmaturia was made; the final diagnosis was lithiasis with hæmaturia. The case had been previously operated upon elsewhere for nephrolithiasis. At the time of examination there were symptoms of frequency and urgency of urination, with bleeding and acute urethral pain. Cystoscopy

revealed an irregular stone, which was removed by litholapaxy. With reference to previous operation for nephrolithiasis, the author makes the statement that abdominal pain which cannot be absolutely settled as to origin warrants a cystoscopic examination with suitable exploration of the ureters and kidneys and an X-ray examination. In this case a peculiar circumstance arose in that before the final cystoscopic examination, the patient developed a profound jaundice which was very slow in subsiding. The final cystoscopy resulted in normal findings.

The author emphasizes the importance of after-care in all these cases of lithiasis. They should be instructed to abstain from alcohol, to adhere to a very bland diet, and to submit themselves to thorough cystoscopic examinations several times a year.

G. J. THOMAS

Boerner, R., and Santos, C.: New Electrodes in the Treatment of Gonorrhœa by Means of Diathermy (Über eine neue Art Elektroden zur Behandlung der Gonorrhœe mittels Diathermie). *Ztschr. f. Urol.*, 1915, ix, No. 1.

The apparatus is described in detail and the technique is considered. The length of application is one hour at a temperature of 43-44-45° C. The highest temperature that can be employed depends upon the susceptibility of the individual patient. Anæsthetics are not employed. The danger of producing burns does not exist with careful application of the electrodes. The results obtained with diathermy were good. In three cases of acute gonorrhœa complete cure was obtained after one or two applications of one hour each. Chronic gonorrhœa was in all cases influenced very favorably, strictures and infiltrations disappearing in a short time. The results in acute and chronic prostatitis were excellent.

A. Goss.

Hinman, F.: The Preparatory Treatment of Urological Operations. *Bull. Johns Hopkins Hosp.*, 1915, xxvi, 158.

This paper presents briefly the methods in use at the urological clinic of the Johns Hopkins Hospital in the estimation of clinical risk and in the preparatory treatment of these cases for operation. In determining the true clinical condition of the patient the routine history and physical examination of the patient are of first importance. A careful chemical and microscopical examination of the urine, an estimation of total renal function by means of phenolsulphonaphthalein, and a blood-pressure determination are considered essential parts of the routine physical examination. This early study indicates special lines of study that will probably prove most fruitful and eliminates others as needless in estimating the true clinical risk.

In case these clinical and laboratory studies give

normal or negative findings the case is considered an excellent surgical risk, and further study is not necessary. Usually disturbances of one kind or another are found. An infected urine demands careful investigation of the whole urinary tract. A low phthalein requires regular urinary studies, repeated phthalein tests, and an estimation of blood urea or blood nitrogen; and the presence of chloride retention or renal acidosis is investigated in special cases. Cardiac involvement demands daily blood-pressure estimations, repeated physical and electrocardiogram records. These studies are all used to control treatment preparatory to operative intervention and to act as a basis in selecting the most favorable time for operation.

The preparatory treatment of chronic nephritis necessarily varies with the character and extent of the disease. Forced feeding of water is valuable, but must be carefully controlled. Where nausea or vomiting are present the water should be given by infusion or per rectum. When acidosis or marked retention are present massive doses of soda bicarbonate often give gratifying results. Lactose or glucose may be advantageously combined with the soda bicarbonate. Edema due to chloride retention demands a salt-free diet and nitrogen retention, regulation of the meat ingested. Sweat baths and bleeding by venous puncture are often useful.

In cardiac cases lack of compensation, marked fibrillation, and acute conditions contra-indicate operation. Rest in bed, regulation of the fluid and food intake and the judicious use of strophanthin and digitalis constitute the preparatory treatment. In cardiorenal risks, combined studies and so-called therapeutic tests are used to determine which factor, heart or kidneys, is the more responsible for the severe symptoms. Improvement of the renal condition under cardiac treatments indicates that the heart is largely responsible for the kidney disturbance, possibly a chronic passive congestion. The use of drugs to reduce pressure in the case of hypertension is contra-indicated. Rest in bed and regulation of diet is the best therapy. Several cases with a blood-pressure of over 210 mm. Hg. have been operated upon without a single complication due to the hypertension. Acute infections of all kinds are definite contra-indications to operation, unless directed primarily against the infection. Such infections demand careful watching to prevent their becoming acute. The significance of uninfected or infected bladders in the case of residual urine before operation is of considerable importance. The chronically infected case is a much safer risk for immediate operation. Urinary antiseptics, bladder and urethral irrigations, and even pelvic lavage when indicated should be rigorously followed.

SURGERY OF THE EYE AND EAR

EYE

Tivnen, R. J.: Prognosis in Eye Injuries. *Illinois M. J.*, 1915, xxvii, 448.

Tivnen discusses a number of factors of especial value in making a prognosis. In its ultimate analysis the question of prognosis is one of diagnosis.

Following the history of an injury it is well to observe a certain routine in the examination. The position of the patient, good illumination, specific instructions to the assistants, arrangement of the dressing table, and the use of a local anæsthetic for inspection of irritable eyes.

In addition certain details of investigation are of distinct service: smears and cultures, blood examination, urinalysis, skiagraph, the electric magnet, testing visual acuity, fields, etc.

In estimating the prognosis, certain factors are to be considered: the age, the possibility of purulent processes in neighboring structures, and the presence of any general constitutional disease—tuberculosis, nephritis, syphilis, etc. In the latter disease a Wassermann test is of great aid in accounting for clinical processes quite inconsistent with the history of the injury.

Reaction to an injury varies according to the specific tissue involved, infection, the chemical character of the substance introduced, the intelligent coöperation of the injured, together with the time which has elapsed since the injury.

The sympathetic process should always be considered.

Burns by chemicals are particularly destructive. The severe reaction resulting from electric flashes are likely to be misleading in forming a prognosis.

D. F. HARBRIDGE.

Ritchie, F. G.: An Improved Technique in Forming a Support for an Artificial Eye. *J. Ophth., Otol. & Laryngol.*, 1915, xxi, 492.

The operation consists of a method of suturing the extrinsic bulbar muscles and the implantation in Tenon's capsule of a suitably fashioned piece of rubber sponge.

After a circumcorneal incision at the limbus the conjunctiva and capsule of Tenon are separated only as far as the attachment of each of the four recti muscles. A pair of advancement forceps are used to clamp down upon the tendon and superimposed tissues while the suture is being placed, after which the attachment of the tendon from the globe is severed. A continuous purse-string is employed for this purpose and takes in the four recti muscles near their attachment to the globe as well as a stitch through the conjunctival tissue lying

between each of these muscles. After removing the eyeball a sphere of rubber sponge, slightly smaller than the enucleated globe, is introduced and the suture tied.

The author claims for the operation, excellent movement of the stump, while the rubber sponge is well tolerated by the tissues.

J. A. WINTER.

Deutschmann, R.: Radiotherapy of Intra-Ocular Tumors (Über intraokularen Tumor und Strahlentherapie). *Ztschr. f. Augenh.*, 1915, xxxiii, 206.

Deutschmann describes a case of sarcoma of the choroid which he treated with mesothorium. The capsule containing the mesothorium was inserted through an incision in the conjunctiva and allowed to remain in place for an hour at the first treatment and later two hours. The tumor had almost entirely disappeared, but there were some traces of it left after six months, when the patient insisted on returning to his home in South America, and he has not been heard from since. Deutschmann thinks it possible there may have been a recurrence or metastasis, although to avoid the chance of metastasis he gave several injections of enzytol intravenously. He thinks that glioma of the retina is probably more amenable to radiotherapy than other forms of intra-ocular tumor.

A. Goss.

McCaw, J. A.: The Colloidal Theory of the Pathology of Glaucoma. *Ophth. Rec.*, 1915, xxiv, 284.

McCaw gives the results of his experiments on 22 sheep's eyes, in testing the theory advanced by Martin Fischer. He refers to the work by Fischer, Perrin, and Trasabura Araki on the chemical changes in colloid tissue, and its relation to the cause of œdema.

The experimenter used fresh sheep's eyes which were placed in acid solutions of various strength, one eye being put into distilled water for purposes of comparison. All the eyes were weighed at the time of being put into the solutions and every five or six hours for thirty hours.

The eyes in hydrochloric, nitric, and acetic acid solutions absorbed enormous amounts of water, as indicated in the increase in their weight. Eyes in hydrochloric and nitric acid solutions of the strength 7:110 normal and 8:110 normal acid ruptured the sclerotic coats. The rupture was in the equator of the eyeball about one-fourth inch back of the muscle insertions. They did not rupture around the region of the cornea.

It was also noticed that the acid solutions gave a steamy appearance to the cornea. This appearance increased with the concentration of the acids. The

opacity of the cornea was greater in the nitric acid solutions than in those of hydrochloric or acetic acid.

The experiments performed lead to the conclusion that the cause of the oedema lies in the tissues; but what changes do the tissues suffer in order to get into this pathological state? A state of oedema is induced whenever in the presence of an adequate supply of water the affinity of the colloids of the tissues for water is increased above the normal. The accumulation of acids within the tissues, brought either through their abnormal production or through the inadequate removal of such as are normally produced in the tissues, is chiefly responsible for this increase in the affinity of colloids for water.

Pathologically considered, glaucoma is a local oedema, or an oedema of a special organ. Clinically considered all the symptoms of this disease are referable to the increase of intra-ocular pressure induced by the large amount of water held by the eye.

Ophthalmologists have explained the increased tension by purely mechanical and nervous means.

The experiments which the author performed and recorded show very clearly that an intense glaucoma can be induced without any circulation whatever.

Obliteration of the filtration angle is a consequence of glaucoma, as in eyes having glaucoma artificially produced the anterior chamber grew progressively shallower. The matter is explained by the unequal swelling of the different colloids of the eye; those posterior to the lens being capable of greater swelling than those anterior to it. Through this unevenness of swelling the ciliary body is crowded against the sclera and presses on the blood-vessels.

D. F. HARBRIDGE.

Beaudoux, H. A.: Corneoscleral Trephining; the New Operation for the Relief of Glaucoma. *J. Lancet*, 1915, xxxv, 249.

Great stress is laid upon an early diagnosis for the relief of glaucoma. The corneoscleral trephine operation of Elliot is described. The author speaks of the good results following this operation and prefers it to iridectomy for the non-inflammatory glaucomata. In the inflammatory forms he is rather doubtful of its advantages. Caution is advised when using atropine for patients past the age of forty.

L. J. GOLDBACH.

Lundsgaard, K. K. K.: Elliot's Operation in Glaucoma (Erfahrungen über Elliots Operation beim Glaukom). *Klin. Monatsbl. f. Augenh.*, 1915, liv, 209.

Sclerectomy is the most effective of the modern operations for glaucoma and Elliot's is the best form of sclerectomy yet devised. Lundsgaard describes the technique of the operation and gives tables showing his results in 40 operations from 1912 to 1914. The operation is relatively certain in its effects and easily performed, but there is one danger

involved, viz., that of secondary infection from without. For this reason he would not use the operation prophylactically as Elliot recommends.

The operation should be performed as early as possible to get the best results, but the author has seen several cases of increase of tension without contraction of the visual field disappear either spontaneously or with the use of myotics, and the recovery has apparently been permanent. The pressure in these cases was not more than 30 to 35, and with pressure no higher than this and with no other symptoms he waits a considerable time before operating. If the pressure is much above 30 and not influenced by myotics he operates in all cases of glaucoma simplex, including those where the visual field is very much decreased and the keenness of vision very much affected, for he has never seen any bad effect on the visual field. But in secondary glaucoma (uveitis with rise of pressure) he considers the case very seriously before performing sclerectomy, for the results have been very serious in the unsuccessful cases.

To avoid secondary perforation and infection he advises making the flap of conjunctiva over the scleral opening as large as possible. He believes that iridectomy is also an aid in prevention as it prevents secondary prolapse of the iris, which favors perforation; when prolapse occurs it should be removed.

A. Goss.

Hallett, D.: Corneoscleral Trephine After the Elliot Method for the Reduction of Intra-ocular Tension. *J. Ophth., Otol. & Laryngol.*, 1915, xxi, 478.

The author reports 12 cases in which this operation was used. He used a bistoury to split the cornea, instead of scissors-points or a Bowman needle. An Elliot trephine, 1.5 mm. in diameter, was used.

He summarizes as follows: Of the 12 trephine operations, 6 were for simple chronic glaucoma. The average primary tension was 53 mm. Hg.; the post-operative tension was 13 mm. Hg.

In 4 cases of secondary glaucoma, the primary tension was 52 mm. Hg.; post-operative, 16 mm.

In 2 cases of acute glaucoma, the average primary tension was 60 mm. Hg.; post-operative, 26 mm.

The author states that in none of the 12 cases was there any indication of a return of tension.

J. A. WINTER.

Boyle, C. C.: A Case of Metastatic Choroiditis. *J. Ophth., Otol. & Laryngol.*, 1915, xxi, 496.

Boyle reports a case of this disease following a post-partum pelvic abscess. Examination of the blood showed a streptococcal infection. The eye itself was inflamed and painful and gradually developed into an iridochoroiditis. The patient was given a subconjunctival injection of 10 minims of a 1:500 solution of cyanide of mercury; following which the inflammation subsided, but the eye was only able to perceive moving objects.

Metastatic choroiditis is generally considered to be due to a septic embolus. Pyæmia and cases of auto-intoxication may also be causative factors. The study of choroiditis following puerperal pyæmia shows that the ocular disturbance is due rather to the general bacteræmia than to a specific embolus. The so-called post-partum ophthalmic inflammation usually occurs about the sixth day after delivery, rarely after the end of the second week. It is either unilateral or bilateral, the latter being fatal in from 80 to 90 per cent of cases. The unilateral cases give much better results as regards life, but the eye involved is usually lost.

J. A. WINTER.

Reber, W.: The Indications for the Operation of Strabismus. *Penn. M. J.*, 1915, xviii, 602.

Reber believes that five important factors govern the indications as to when to operate for esotropia and how: (1) whether the patient is a dispensary or a private case; (2) the age of the patient; (3) whether the orthoptic treatment has been completely carried out; (4) whether the strabismus is monocular or binocular; and (5) the rotational power of each eye individually and its behavior in association with its fellow.

Each of these factors is dealt with at length and the question of tenotomy or advancement briefly considered.

J. MILTON GRISCOM.

EAR

Berry, G.: Labyrinthitis Following Operation for Atresia. *Boston M. & S. J.*, 1915, clxxii, 700.

The case reported is that of a boy of 15, operated on for a partial atresia, with apparent improvement in hearing. Three weeks later and coincident with the springing up of troublesome granulation tissue in the tympanic cavity, a vertigo developed, which has persisted in spite of a radical exenteration and then a labyrinthine operation. Five weeks following this last operation, the closing of the drainage from the meninges in the process of healing was attended by marked symptoms of meningeal pressure, which gradually subsided. The ear cavity became epidermatized in six weeks. Now, thirteen months after the first operation, the ocular nystagmus has become fairly well compensated, the hearing is apparently improved, but a muscular incoördination, though much better, continues.

The author discusses in detail the operative method for the relief of atresia; the results to be expected; the cause of the vertigo in this case; the time and method for operating for labyrinthine vertigo, as well as giving a complete report of the post-operative course, hearing tests, and labyrinthine tests in this case.

OTTO M. ROTT.

Shuter, R. E.: Intracranial Extensions of Middle Ear Disease. *Med. J. Austral.*, 1915, i, 281.

The author discusses sinus thrombosis, meningitis, and brain abscess.

With reference to sinus thrombosis, after citing the course of a straightforward typical case, the author mentions the following varieties in which the diagnosis may be very difficult:

1. A mural thrombus caused by infection through the vaso vasorum and remaining plastered to the wall of the sinus without occluding its lumen. From this focus emboli may separate and be carried away in the blood stream, causing metastatic abscesses. On exposure of the sinus wall in these cases it may present no evidence of the presence of a thrombus, such as granulations, alteration in color, etc. If, however, definite rigors have occurred, it is safe to open the sinus and examine its lumen.

2. Where there may be no distinctive clinical symptoms, but the condition is discovered accidentally during the course of the mastoid operation. In these cases the center of the clot may be infected and breaking down into pus, while there is at each end a non-infected protective thrombus shutting the infected area off from the general circulation.

3. The sinus may be thrombosed without the entrance or presence of bacterial infection, but caused by the sinus wall losing its normal vital tone in the presence of surrounding inflammation.

As to treatment, in the absence of symptoms of general infection, the author opens the sinus and turns out the clot, ligating the jugular later if symptoms indicate it. Where rigors and other evidence of systemic infection are present, he exposes, ligates, and dissects out the jugular, facial, lingual, and superior thyroid veins.

After mentioning the various forms of meningitis, the author lays stress upon the mode of invasion and method of recognition of acute diffuse meningitis in the early stage. This form is secondary to involvement of the internal ear via the labyrinth. This involvement is recognized by the nystagmus produced, and it is this sign to which attention should be directed. In the early stage there is a fine nystagmus to the diseased side and later on a coarse nystagmus to the sound side. The occurrence of a purulent labyrinthitis calls for an immediate cleaning out of the mastoid and middle ear.

The treatment of purulent meningitis is hopeless, but the serous form is treated by making repeated spinal punctures, opening the meninges in the posterior or middle fossa, and drainage by gauze wicks inserted beneath the dura or, following West and Scott, by making drainage through the internal meatus by means of a spiral wire.

In abscess formation if the pus is extradurally located, its recognition is easier and evacuation more certain than when the pus is in the brain tissue itself. If, especially after a fortnight, the pus in the ear is greater than one would expect from the area of the middle ear; if it appears in large amount rapidly after mopping out; if the ear is dry for a day or so and then again becomes full, particularly if the period of apparent cure is associated with headache, an extradural abscess can be suspected and should be sought by opening the tegmen tympania or antri.

The best symptom for recognizing cerebral abscess is headache, intense and continuous, particularly if localized to the diseased side and it comes on after operation upon the ear and is accompanied by fever.

The abscess in the temporosphenoidal lobe can best be opened and drained through the mastoid wound, but the author prefers to open and drain a cerebellar abscess posterior to the sinus.

OTTO M. ROTT.

Williams, C. E.: A New Treatment of Middle Ear Disease. *J. Ophth., Otol. & Laryngol.*, 1915, xxi, 529.

The treatment employed does not include the common practice of inflation, but is directed principally to overcoming the causative congested areas in the nose and nasopharynx, and massage of the ear drum through the external auditory meatus.

At first the patient comes for treatment every other day for two weeks and the air in the external auditory canal is alternately rarefied and condensed from ten to twenty times by means of the Siegle otoscope. Following this the Dowling argyrol tampons are placed in the nose and left for a period of from ten to sixty minutes. After removal of the tampons the cavities of the nasopharynx and nasal fossæ are thoroughly douched with a mild alkaline solution propelled from an atomizer, followed by an oil spray and the inhalation of an oil vapor. The treatment is completed by massage from 30 to 120 seconds over each ear induced by a bell-shaped glass cup and an electric motor. The strokes of the motor should be timed to give about 120 strokes to the minute.

By this method the author has obtained relief of all symptoms and a restoration of the drum to a more normal position and appearance.

OTTO M. ROTT.

Large, S. H.: Gold-Platinum Inserted in Middle Ear for Adhesive Processes in the Middle Ear. *Laryngoscope*, 1915, xxv, 370.

Large reports a case of chronic catarrhal otitis media in a boy, aged 14 years, whose hearing was improved immediately by the insertion of gold-foil into the middle ear.

The technique used was as follows: Under ether anæsthesia, two incisions were made, one in the anterior quadrant and the other in the posterior; the drum membrane was separated from the inner wall of the middle ear and a piece of platinum and gold-foil, one-five-hundredth of an inch in thickness, inserted allowing the anterior end of the plate to protrude through the anterior incision. The hearing test made after all inflammatory conditions subsided showed marked improvement.

The author concludes that if some foreign substance could be found which would be tolerated by the middle ear much could be accomplished in these cases.

ELLEN J. PATTERSON.

Ewing, A.: Difficulties in Diagnosis of Intracranial Extension in Suppurative Otitis. *Med. J. Austral.*, 1915, i, 285.

The early diagnosis of intracranial complications is difficult.

The following initial symptoms are noted:

1. Headache — dull or boring pains in the mastoid, occipital or temporal regions — especially if associated with a slight rise in the evening temperature. The pain sometimes may be away from the seat of the disease. Pain in and behind the eye on the same side as the lesion is generally a danger signal.

2. Fever — the occurrence of febrile attacks, sometimes associated with increase of pain, vomiting, dizziness.

3. Mental clouding.

4. Wasting and constipation. OTTO M. ROTT.

Berens, T. P.: Ambulant Otitic Meningitis. *Am. J. Surg.*, 1915, xxix, 147.

This term is applied to those forms of meningitis, which, while answering to the characteristics of meningitis as revealed by laboratory tests, give no characteristic clinical phenomena. In some cases the meningitis had lasted for as long as two weeks, the patient meanwhile going about his ordinary business, with none of the ordinary symptoms present.

The author concludes that these cases teach the necessity for bacterial examination and accent the fact of the gravity of infections due to capsuled organisms. Headache, though not severe, in the presence of a discharging ear, should excite our gravest fears. Lumbar puncture must be resorted to in order to establish a diagnosis, and will prove invaluable in forming a correct prognosis.

OTTO M. ROTT.

Cocks, G. H., and Dwyer, J. G.: The Isolation and Cultivation of the Tubercle Bacillus from the Discharging Ear in Cases of Chronic Purulent Otitis Media. *Laryngoscope*, 1915, xxv, 148.

The authors report a series of three cases in which the diagnosis was made by a cultural method, as follows:

After obtaining the aural discharge in wide-mouthed bottles, it is immediately saturated with sodium chloride and allowed to stand for 30 minutes to an hour, at the end of which time the bacteria are found floating on the surface. This floating film is then collected with a deflagration spoon in a wide-mouthed bottle and an equal volume of normal sodium hydroxide added. The mixture is shaken well and left for digestion in the incubator at 37° C. for one to two hours, or longer, care being taken to shake it every half hour. The mixture is then neutralized to sterile litmus paper with normal hydrochloric acid, and the sediment is inoculated into several test-tubes. Growth usually occurs in from 15 to 30 days.

A series of seven cases is reported in which the

diagnosis was made by the antiformin methods of making smears. The method is as follows:

The discharge was obtained in as large a bulk as possible in a small quantity of normal salt solution, the latter being used in an amount just sufficient to wash out the pus. The water used in making up the salt solution was freshly distilled each day in order to be sure that none of the acid-fast organisms present in tap water or in old distilled water could vitiate the results. This discharge was then treated with an equal amount of 15 per cent antiformin, and the whole was allowed to stand for a varying period, depending upon the consistency of the mixture, etc. It was then centrifugalized and the precipitate was washed in order to remove the excess of alkali. Smears were then made from the precipitate and stained by the Ziehl-Neelson and Pappenheim method.

OTTO M. ROTT.

Lewy, A.: The Treatment of Acute Otitis Media by the General Practitioner. *Clinique*, Chicago, 1915, xxxvi, 221.

The first step is to treat the nasopharynx by dropping 10 to 20 per cent argyrol through each nostril — 6 to 8 drops into each nostril — with the child in the recumbent position.

When the membrane is reddened and there is earache, the author recommends the following formula, warmed and dropped into the ear or applied on a tampon and left in place twelve to twenty-four hours: phenol, gr. xxiv; alcohol, 3 T; glycerine, 3 ss.

If the drum bulges, it should be incised, after which, unless the discharge is very thick, the author inserts a drain of gauze. If the patient cannot return for daily treatment, the gauze is replaced by swabs of cotton on a toothpick which the patient employs in order to keep the ear clean.

For mastoid tenderness, a wet pack is used over the ear, e.g., half boric solution and half alcohol, applied warm and covered by an impervious dressing. It should be moistened every six or eight hours. After the acute symptoms have subsided, the ears should be inflated twice weekly.

OTTO M. ROTT.

Shepard, G. A.: An Interesting Case of Mastoiditis. *J. Ophthalm., Otol. & Laryngol.*, 1915, xxi, 520.

The case reported by the author was that of a patient, aged 76, in whom there appeared a slight swelling over the left zygoma, but with no local or general symptoms. Two weeks later the swelling was incised and pus evacuated. Four months later swelling over the mastoid was observed and a simple mastoid operation performed. The sinus and dura were exposed. At the third dressing the

tympanum was filled with creamy pus, and deep pressure under the mastoid tip caused an increased flow. A radical operation was then done and the floor of the tympanum found necrotic. Pus welled up from a sinus along the jugular, but there was no pain or increase of temperature. At the end of two weeks when the flow of pus stopped the patient complained of pain in the occiput and there was present an extensive swelling of the neck extending back to the median line. Pressure over the swelling caused pus to exude from the tympanum. Two incisions made at intervals of two weeks failed to release the pus. One week later pus was evacuated through the last incision and in another month the patient was well.

The author concludes that a swelling in the zygomatic region accompanied by a history of fairly recent acute ear symptoms and deafness should be treated as an operable mastoiditis.

OTTO M. ROTT.

Palen, G. J.: An Anatomical Consideration of Mastoiditis. *N. Eng. M. Gaz.*, 1915, l, 169.

The author calls attention to the following anatomical points concerning the mastoid which have an influence on the course and prognosis of an inflammation of this structure:

1. The variation of the size of the mastoid depending upon the character of the contents, whether the cells are of the pneumatic, diploëtic, or mixed type.

2. The relation of the antrum to the posterosuperior canal wall, the middle and posterior cerebral fossæ, and the lateral sinus.

3. The variation in the thickness of the inner and outer plates of the mastoid.

Because we cannot tell definitely with what type we are dealing, and because the type present may have the greatest bearing on the outcome of the infection, the author makes a plea for safety in advising a mastoid operation when mastoid symptoms persist despite careful treatment.

OTTO M. ROTT.

Smith, C. M.: The End-Results of Radical Mastoid Operation. *Laryngoscope*, 1915, xxv, 332.

Chronic otorrhœa which has its origin in the mastoid antrum or lower cells can be relieved as a rule only by a mastoid operation. The radical mastoid operation should be regarded as a major procedure, frequently performed as the first step for the relief of an intracranial lesion. In from 80 to 95 per cent of the author's cases he obtained complete cessation of all discharge, improvement in hearing, and marked improvement in the general health of the patients.

ELLEN J. PATTERSON.

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Pfister, F.: A Plea for the Corrective and Cosmetic Surgery of the Nose. *Wis. M. J.*, 1915, xiv, 22.

The author makes a plea for the well-prepared specialist to take up this work instead of leaving the field to be cultivated by the quack. In support of this contention he adds that the demand is considerable; the difficulties are not nearly so great as was formerly supposed, and are not to be compared with sinus work. The results as a rule are good.

The following two cases are reported:

1. A case of septal perforation which was closed by a flap from the lateral wall of the inferior meatus dissecting upward the mucoperiosteum of the anterior portion of the inferior turbinate, removing the bone of the turbinate for a corresponding distance back. The lower end of this flap was lifted up to the roof of the nose against the septum and sutured in place, the flap not being severed from the outer wall of the nose until the third day when this portion was attached to the lower border of the perforation. The results were good.

2. The second case was that of a girl who had a deviation of the external nose. A submucous resection of septum relieved the nasal obstruction and partially corrected the external deformity. Later, under novocaine infiltration, the nose was entered from the vestibule, the lateral cartilage perforated, and the skin lifted up subcutaneously. A cut was then made subcutaneously across the upper part of the cartilaginous ridge of the nose and laterally outward through the upper lateral cartilage down to the maxillary bone. The nose was then overcorrected and held for a week with adhesive strips, after which perforated metal splints were inserted into the nose.

OTTO M. ROTT.

Carter, W. W.: Cases of Nasal Deformity Corrected by Bone Transplantation. *Laryngoscope*, 1915, xxv, 321.

To demonstrate his theory that bone, aseptically and autoplastically transplanted, continues to live and take part in the local process of repair, continues to grow and that its growth is limited by the physiological requirement of the part, the author reports several cases with radiographs taken after operation.

After preparing the right side of the chest, the nose is thoroughly cleansed with Dobell's solution, the face washed and painted with tincture of iodine followed by alcohol, and the nasal cavities blocked beyond the ends of the nasal bones with pledgets of cotton. Raising the tip of the nose with the left thumb, a small spatula-shaped knife introduced

from within the nostril at a point between the upper and lower lateral cartilage is manipulated by the thumb and index-finger on the outside of the nose to elevate the skin over the entire nose and make a slit through the periosteum over the nasofrontal process.

The piece of rib is then placed in position and anchored under the periosteum over the nasofrontal process with the end of the bone reaching within half an inch of the tip of the nose.

Recently the author has transplanted a portion of the rib in continuity with the costal cartilage so that in reconstructing the nose there is bone arch where that is normal and cartilage where cartilage is normal—thus reproducing more nearly the natural condition and preserving the flexibility of the tip.

ELEN J. PATTERSON.

Dewey, M.: The Cause of Failure of Some Rhinological Operations. *J. Ophthalm., Otol., & Laryngol.*, 1915, xxi, 309.

Concerning our inability to produce normal nasal breathing in patients who have long been "mouth breathers" due to adenoids, even after the complete removal of the primary causative factor, the adenoids, the author states that it is due to the fact that while the adenoids produce mouth-breathing the latter, especially if long continued, produce deformities and abnormal developments, which in turn make normal nasal breathing impossible.

These deformities and abnormal developments are the narrow upper dental arch; the protruding anterior teeth; the high roof of the mouth; the underdeveloped mandible; receding chin; short upper lip; abnormal muscular pressure; and frequently a deflected septum. Just how these are produced the author explains in clear detail. Orthodontic measures alone are capable of effecting a cure.

OTTO M. ROTT.

Johnston, R. H.: Total Rhinoplasty. *Am. J. Surg.*, 1915, xxix, 149.

The operation consisted in removing a piece of cartilage from the left eighth rib and slipping it underneath the periosteum a little above the center of the left forehead. About three months later the skin on the two sides of the remains of the nose was dissected up. The flaps were turned into the facial opening, skin surface down, and sutured in the middle line so that the raw surfaces would quickly unite with the raw surfaces to be brought down from the forehead. The flap for the formation of the nose began at the inner end of the right eyebrow and continued up to the hair line and then across the forehead to the end of the transplanted cartilage,

from which point it passed downward and inward above the left eyebrow to the root of the nose. The skin was dissected away from the periosteum up to the cartilage, which was removed from the bone with its strip of attached periosteum. The flap was then turned down, with its raw surface below. The upper end of the cartilage was stitched above to hold it stationary, while below it was bent at the notch made three-eighths inch from the end, so that the lower end was sutured into an incision of the upper lip. The flap was split in the middle line up to the cartilage. After this was done the two edges of the flap were sutured to the raw surfaces on the sides. The two lower flaps, formed by splitting the skin to the cartilage, were turned up into the nostrils and held in place by pieces of rubber tubing inserted on each side of the cartilage.

OTTO M. ROTT.

Goldstein, M. A.: Lipoma of the Maxillary Antrum. *Laryngoscope*, 1915, xxv, 142.

The author reports the case of a patient with lipoma of the antrum, for which a radical operation on the antrum was performed and the mass removed. This patient had previously had a luetic infection with ulceration and necrosis of a part of the hard palate.

The question raised in the author's mind was the relation between the lues and the lipoma; whether the former was the exciting cause of the local pathology of the antrum and affected the fatty degeneration of the living mucosa, or whether the lipomatous neoplasm of the antrum was simply coincident with lues. The pathological report clearly indicated that the contents of the antrum was not a lipomatous degeneration of the mucous membrane, but an organized lipoma.

OTTO M. ROTT.

Leshure, J.: A Case of Temporosphenoïdal Abscess with Unusual Complications. *Laryngoscope*, 1915, xxv, 281.

The author reports a case of temporosphenoïdal abscess following a chronic suppurative otitis media, in which the diagnosis of abscess was not made for two weeks after admission. At the time of admission the patient presented a swelling over the ear, and a diagnosis of deep temporal abscess was made. An incision over the swelling down to the periosteum revealed the presence of only a small amount of pus. Three days later the temperature rose to 103.4° and the patient became drowsy, but because of the fact that the urine was diminished in amount and contained albumin and casts, and because under appropriate treatment the patient improved, this drowsiness was considered due to nephritis, but in view of subsequent recognition of temporosphenoïdal abscess, the question arises as to whether or not this first attack of stupor was not due to the beginning cerebral involvement.

After opening the abscess when the patient was in a comatose condition, meningitis supervened and death followed.

Another interesting feature of the case was the preponderance of irritative symptoms (Kernig's sign and rhythmic arm movements) on the affected side. The explanation offered is that the fibers failed to cross in the pyramidal tract.

OTTO M. ROTT.

Coffin, L. A.: A New Non-Operative Treatment of Disease of the Accessory Sinuses of the Nose. *Med. Rec.*, 1915, lxxxvii, 556.

The treatment consists of alternating positive with negative pressure in the nose. After all the pus has apparently been "sucked out," the positive pressure applied by means of an oxygen tank seems to force pus from the walls of the cavities, for so soon as negative pressure is again applied more pus can be sucked out.

OTTO M. ROTT.

THROAT

Müller, J.: The Treatment of Laryngeal Tuberculosis (Über die Behandlung der Kehlkopftuberkulose). *Nord. Tidsskr. f. Terapi*, Kjøbenhavn, 1914, xii, No. 7.

The author gives his conclusions derived from the treatment of 1,000 cases of laryngeal tuberculosis. In general everything should be avoided that might cause irritation, especially alcohol and tobacco. The use of the voice should be limited to the minimum. He then discusses the medicinal treatment and finally the surgical methods. He performed 40 epiglottis amputations by the endolaryngeal route, securing good results. His indications for the procedure are: (1) a tuberculous infection limited, or nearly limited, to the epiglottis, provided the condition of the patient permits it; (2) a decided dysphagia irrespective of the condition of the larynx and lungs, provided that the epiglottic involvement is the cause of the dysphagia; (3) a decided tuberculous infection of the epiglottis even in cases of extensive laryngeal involvement, also if dysphagia does not exist, provided, however, that no marked pulmonary lesion is present, so that after the operation a cure or at least marked improvement is probable.

The author has also seen marked improvement in cases in which the epiglottis alone was not involved. It is also important that after removal of the epiglottis the treatment of the inner larynx is much facilitated. Much less certain are the results of excision of tuberculous infiltrations of the vocal cords, but even here he obtained results if the infiltrations were limited and the lung condition good. The results of excision of infiltrations in the plica ventricularis and in the interarytenoid region are much more doubtful.

Of the extralaryngeal methods the author first discusses the longitudinal fissure operation. It is the operation of choice if in the presence of a good lung condition the laryngeal tuberculosis becomes extensive or does not respond to endolaryngeal treatment. A tuberculous infection of the wound

is not to be feared with modern technique; the dangers of a miliary tuberculosis are overestimated. The author does not favor laryngectomy. Gluck performed the operation twenty times. One patient died as a result of the operation, 12 during the first year, and 7 were cured, of which 3 died of tuberculosis of other parts of the body. The good results of tracheotomy observed by Moritz Schmidt in cases of stenosis are due to placing the larynx at rest, according to the author. Müller, however, obtained no results with the thorough silence cure. In laryngeal tuberculosis and pregnancy good results were observed following induced abortion.

In conclusion, he discusses the palliative treatment of several cases, dysphagia and stenosis. Of the utmost importance in the treatment of laryngeal tuberculosis is the condition of the lungs and this must be looked after, as the chances for improvement and cure of laryngeal tuberculosis frequently run parallel with the pulmonary improvement.

L. A. JUHNKE.

MOUTH

Maunsell, C. B.: Cancer of the Tongue and Floor of the Mouth. *Med. Press & Circ.*, 1915, xcix, 463.

Reports from many workers draw special attention to the hopelessness of the treatment of cancer of the mouth by means of radium applied by any of the previously known methods.

The author thinks this the first case which has been recorded of the obliteration of an extensive cancer of the tongue and floor of the mouth by any method of treatment other than excision. The method of treatment adopted is that which was originally and ably described by Joly and Stevenson in 1914, and consists in the introduction into the diseased area, by means of ordinary hollow metal needles, of known quantities of radium emanations without screening of any kind. The glass tubes and needles can be made of various lengths to suit individual cases.

For intra-oral work the author uses special needles made with an eye instead of a mount at the end, in order that they may be held in position by suture.

The patient, a man aged 61, eighteen months previous had noticed a hard lump on the under surface of his tongue which gradually increased in size, later ulcerating and extending rapidly, causing much pain in his left ear and the left side of his face. The patient was thin and cachectic. The area in-

volved the anterior part of the tongue, frænum, and floor of the mouth up to the mucoperiosteum of the jaw. Slightly enlarged glands could be felt in the left submaxillary region.

The report of microscopical section by Wigham is as follows: "Masses of cancer-cells supported by fine strands of connective tissue, cells of squamous type showing many mitoses."

Six needles were introduced—two into the tongue, one on the interior side of the former position of the frænum, four being introduced through the submental skin. The needles contained 23 millicuries of emanations, and were left 23½ hours. Two days later four needles containing 11 millicuries were introduced amongst the submaxillary glands, and left there 24 hours. Two days later six needles containing 11 millicuries were again inserted—four into the tongue and two into the floor of the mouth. These were removed in 26 hours. Light ether anæsthesia was used. The only reaction noted was an evening rise of temperature to 100° on the first two occasions. The pain soon ceased and in 48 hours the growth was softer and in 7 days the glands were much smaller. In 22 days the ulcer was covered with normal looking epithelium, but considerable induration could be detected. Within the next 52 days the needles were inserted three times.

A piece of tissue was removed for microscopical examination and showed nearly normal epithelium covering the site of the cancerous area, some thinner, with slightly flattened papillæ, fairly firm connective tissue with many blood-vessels and some patches of round cells, some islands of muscle fibers, some of them degenerated; one small mass of cancer-cells differing from the other section in that the bodies of the cells were much smaller in proportion to the size of their nuclei. There were no mitoses and the cancer-cells were surrounded by foreign-body giant cells.

The patient was obviously cured, but on account of the remaining cancer-cells, notwithstanding they were changed and attached by giant cells, the author introduced 6 needles containing 16 millicuries into the tongue and area; these were removed in 48 hours. One month later a hæmorrhage occurred from a sloughing area as large as a pigeon's egg. This was scraped out and the patient was healthy when last seen by the author a few days later.

The author considers the patient cured and thinks the last treatment might have been omitted or at least considerably reduced.

H. A. PORTS.

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INTERNATIONAL ABSTRACT OF SURGERY

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COLLECTIVE REVIEW

SURGERY OF THE SEMINAL VESICLES AND THEIR DUCTS

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THE important relation that the seminal vesicles bear to a variety of systemic conditions is gradually being appreciated, and the medical profession is now being awakened to the realization that appropriate treatment of these important structures will frequently elucidate many cryptogenic infections. For many years, in his numerous contributions on this subject, Fuller has repeatedly warned the medical world of the seriousness of the diseases of these organs, and has offered abundant proofs in his many cures, but, until very recently, there has been apparent lethargy on the part of the profession to accept his conclusions. He is now getting his just recognition. Recent contributions on this subject by Billings, Cabot, Barney, Squier, and others serve to substantiate Fuller's claims, and these organs are now becoming the cynosure of the urologic eye.

ANATOMY AND PHYSIOLOGY

The gross anatomy of the seminal vesicles and their ducts is so familiar that time will not be consumed in giving a detailed description; I wish, however, to direct attention to the important canal system of these structures, which has been so beautifully demonstrated by Pallin, Picker, Barnett, and Belfield. Pallin in 1901, in a review of 20 cases which he had studied by means of the corrosion method, divided the vesicles into (1) those with a partly convoluted main channel and (2) those with the main channel markedly convoluted; and he further subdivided these

according to the diverticula. More recently, Picker in a study of 150 subjects by means of collargol or bismuth-paste injections, has been able to classify five types of vesicles:

1. Simple straight tubes.
2. Thick twisted tubes with or without diverticula.
3. Thin twisted tubes with or without diverticula.
4. Main tube, straight or twisted, with larger grapelike arranged diverticula.
5. Short main tube with large irregular ramified branches.

The seminal vesicles receive a large blood supply from the middle hæmorrhoidal and the inferior vesical arteries, which enter at their upper outer poles. This is extremely important to know in attempting vesicle enucleation. It is also important to know that just in this locality the vesicle is in its closest relation to the ureter. The veins run a similar course to the arteries, the nerves being derived from the pelvic plexus. Barney has also found, in two specimens, nerve fibers in the tissue immediately surrounding the vesicle. The lymphatics drain into the glands along the iliacs. Belfield has shown that the vesicles and vas normally accommodate about from 4 to 6 cubic centimeters. Other observers have reported from 3. to 10. The vesicles are composed of a dense muscular wall, made up of an inner and outer longitudinal and middle, circular coat, with numerous sympathetic ganglia arranged around the periphery. They are lined

with cylindrical epithelium in the young — cuboidal or flattened in the aged. Another important composition of the vesicles is a dense elastic tissue surrounding its many cavities. In the young, the vesicles are smaller and much more simple than in the adult, and the elastic tissue is found in a much smaller quantity.

It has been proved without question that the seminal vesicles are not only reservoirs for semen, but serve a much more important function — the secretory function. Their secretion adds one of the important constituents to the seminal fluid. The secretory activity of the cells of the vesicles has been demonstrated by the staining of Benzley, by which the cells are demonstrated to contain numerous mitochondria. Another important function of the seminal vesicle is that of expulsion, which makes it an important factor in the act of ejaculation. De Bonis found in rats, bats, and guinea pigs considerable inactivity not only after castration, but during hibernation; but during sexual excitement, the cells showed marked activity; the seminal vesicles, therefore being, as Barney cleverly puts it, indissolubly interdependent and forming with the prostate a procreative triad essential to posterity. Huet has shown that the seminal vesicle is also an excretory organ. He has found bacteria in the secretion of vesicles from healthy animals, and moreover, in animals dying of acute sepsis, he has found the specific organism in the secretion. This may be an important fact in the transmission of syphilis.

PATHOLOGY

The great frequency with which the seminal vesicles are subjected to infections makes them bear an important pathological significance. It has been shown that 90 per cent of gonorrhœas become posterior and that 90 per cent of these cause involvement of the seminal vesicles. Many claim that the vesicles are much more easily involved than the prostate; this is not conceded by all, nevertheless without question in the great majority of deep urethral infections, they are involved. This infection, which is initially an intra-semivescicular process, which may be acute, subacute, and later chronic, is almost always associated with a degree of perivesicular involvement of the surrounding structures. The inability of an infection thus engrafted to receive natural intra-urethral drainage, makes it next to impossible for a lesion to become completely cured when left to nature. There is also associated a coincident infection in the prostate. In the acute infection of the vesicles, the gonococcus is almost always the

cause, but in the chronic infection the gonococcus is rarely ever found. Squier in a series of bacteriological investigations on the seminal fluid from chronic infections, obtained negative findings from his cultural studies. Cabot and Barney also received sterile cultures in several cases examined. They, however, found a culture of intracellular diplococci in one case. Voelcker has observed the pneumococcus, and Picker the pneumococcus and also the gonococcus. The other organisms which have been observed are staphylococcus, streptococcus, colon and tubercle bacillus. It seems probable that with advanced and improved technique, it will be found that many of the reported sterile cultures will contain organisms, particularly the colon bacillus. Dr. Hugh Greely of Boston in examining a pathological specimen for Doctor Cabot, found in tissues of the seminal vesicles, by the technique of Rosenow, an unknown bacillus, resembling bacteriologically the bacillus of Ducrey. This is a very important discovery and may eventually lead to a more accurate knowledge of the bacteriology of these organs.

The gross pathology of chronic inflammatory lesions of the seminal vesicles is quite variable. They may be large, firm, and distended with obstructed ducts and abscess formations. They are usually, however, involved more particularly in a perivesicular infiltration, so that one may not be able to outline the confines of the vesicles because of their being matted down with a plastic exudate. In fact, operative experience in acute seminal vesiculitis, in which the rectal touch has seemingly demonstrated swollen vesicles and supposed abscesses, has shown that the vesicles in such cases are not distended with pus, but the process is usually one of perivesicular infiltration.

Our chief acquaintance with the pathology of these organs has been gained by means of injections and X-ray photographs. Belfield, several years ago, by means of vasostomy and filling the vas and vesicle with collargol, and simultaneously taking an X-ray picture, showed the vesicles to be very convoluted structures. This has been further demonstrated by Cabot, Barney, Schmidt, Kretschmer, Fuller, and others. These photographs show that the majority of the inflammatory, chronically infected vesicles, particularly the ones which we have been unable to cure by local measures, such as massage and topical applications, are made up of many diverticular sacs emptying into the main channel by very narrow constricted orifices, making natural drainage almost an impossibility.

Cabot and Barney have studied the pathology

of vesicles removed by autopsy and state that in many cases dissection was a matter of shelling out the vesicle from its capsule; these were microscopically normal, but usually dissection was difficult owing to dense adhesions. They have observed that scar tissue is almost always found more abundantly at the lower end of the vesicle and the vas, which results in an artificial union of these structures. Many claim that the vesicle and vas are always involved in the process, so as Barney states, if one vesicle is involved its fellow may be safely accused. The inflammatory vesicle usually presents a greatly thickened wall and the muscle bundles are replaced by connective tissue. There are frequently areas of round-cell infiltration scattered throughout the section.

The seminal vesicle bears an important pathological significance, also, on account of its proximity to the ureter. Young, Squier, and Voelcker have reported cases of renal infection due to ureteral stricture secondary to the vesicles. Injuries and wounds of the seminal vesicles are exceedingly rare. Gueillot (quoted by Keyes) reports one authentic case of accidental wound which was due to fracture of the ischium. Injuries of the ejaculatory ducts are quite common during the course of a prostatectomy, particularly in the hands of the unskilled. Calculi occur quite frequently. Primary tumors are exceedingly rare. Ceelen reports a case of fibromyoma. In his review of literature he found four cases of cancer and one case of sarcoma, the latter described by Zahn. Cancer of the seminal vesicles is exceedingly common, but it is almost, if not always, secondary to cancer of the prostate.

Concerning the omnipresent tuberculosis, which is one of the most important diseases of the seminal tract, there has been great diversity of opinion. It has almost always been accepted that tuberculosis of the seminal tract had its origin in the epididymis, the vesicles being secondarily involved, and with very few exceptions this idea still prevails. Halle and Motz in 53 cases of urinary tuberculosis found the vesicles involved in 38—11 times unilaterally, 27 times bilaterally. Saxtorph has found isolated tuberculous lesions in the seminal vesicles 7 times in 205 cases. Tuberculosis of the seminal vesicles may be of the miliary type, this, however, is exceedingly rare. There may be a nodular tuberculosis, characterized by large tubercle formations. The most frequent type, however, is the massive infiltrated tuberculosis, the vesicles being transformed into a dense mass of connective tissue with caseation and areas of softening. With such a process involving the vesicles, the prostate is almost

always similarly invaded. The tuberculous changes in the vas are similar to the changes in the vesicles, being marked by nodular, hard, infiltrated areas. This nodulation is most marked at the two ends of the vas and is quite distinctive of tuberculosis.

Before undertaking a description of the many surgical methods which are employed for relief of diseases of the seminal vesicles, we will briefly consider the protean aspects in the symptomatology of diseases of these structures. It seems difficult to get the general profession to realize that these important organs in the male economy are subject so frequently to infections. If they will consider their location—next a filthy rectum, at the gateway between the genital and urinary systems through which bacteria so frequently pass—they must be convinced of their importance. A short summary of the various symptoms is as follows: various chronic discharges; many chronic bladder distresses; the numerous referred pains in the back, sacral region, hips, legs, perineum, groins, testicles, and penis; recurrent epididymitis and sexual derangements; a vast array of joint processes of an infectious nature, such as articular rheumatism, rheumatoid arthritis, arthritis deformans, and hypertrophic arthritis; numerous renal and cardiac complications, digestive upsets, and an array of nervous and mental manifestations which are almost inconceivable.

If the profession will make an attempt to thoroughly investigate these structures when any of the above lesions are present, it will find to its satisfaction that many of the above disorders may be effectively cured.

The great majority of chronic inflammatory processes in the vesicles are capable of being clinically cured without surgical means. Routine massage and applications usually effect a prompt amelioration. There are a few cases, however, in which after conscientious local, palliative treatment, our efforts prove fruitless; these cases are the ones mentioned previously which present numerous diverticulæ and severe inflammatory infiltrations which will not soften and drain. These cases require surgical measures for their relief.

Squier in his recent article sums up the surgical indications in three words: pus, pain, and rheumatism. (1) Under the first he includes (a) the acute cases, developing in the course of gonorrhœa, often mistaken for prostatic abscess, in which the perivesiculitis simulates prostatic enlargement; (b) cases of recurrent epididymitis following acute urethritis and vesiculitis; (c) cases of chronic vesiculitis which simulate spermatorrhœa; and

(d) those in whom the discharge from the urethra occurs during defecation and who have resisted faithfully carried out non-operative treatment. (2) Under pain he includes the various referred symptoms mentioned in a previous paragraph. He reserves surgery, however, for cases which resist local treatment. (3) In the rheumatic group he includes acute, subacute, chronic, and the deforming types of arthritis in which a definite relationship can be determined between the joint and the vesicle. Fuller has reported an astounding number of cures in chronic joint involvement by means of seminal vesiculotomy. Cabot would reserve operations on the seminal vesicle for cases of crippling arthritis.

Concerning tuberculosis of the seminal tract, opinions differ. As tuberculosis is generally secondary to an epididymitis, epididymectomy is the operation which is usually employed, and most operators believe that the vesicles, under proper hygienic and tuberculin treatment, get well. The method of treating the vas differs with different operators: some remove it only to the external ring, some open it to the canal and follow it as far as possible; other more radical surgeons believe in excision, not only of the epididymis and vas, but also of the corresponding vesicle; some of the even more radical add to this surgical mutiny the ablation of the prostate. At this time, we feel that the general profession does not regard seminal vesiculectomy for tuberculosis a wise surgical procedure. Some surgeons practice injecting the vas with antiseptic solutions for their beneficial effect on the vesicular cavities. For this, argyrol and collargol have been most frequently employed. This is of questionable value. As carcinoma of the seminal vesicle is practically always secondary to carcinoma of the prostate, it is removed in conjunction with the prostate in the so-called complete prostatectomy in which the vesicle, prostate, bladder neck, and membranous urethra are removed *in toto*. This applies only to early carcinomatous processes in the vesicles.

SURGERY

We shall now attempt to give a summary of the various operative techniques on the vesicles. These may be divided into: vasotomy with injections of the vesicles, vesiculotomy, and vesiculectomy. Vasotomy, heralded by Belfield, has been employed by him in many cases of vesiculitis. It does not at present seem to have a substantial hold on the profession in the surgery of these organs. He has reported excellent results and others have corroborated his statements. The technique is simple, consisting in making a small

scrotal vasotomy and allowing argyrol, collargol, or some other solution to find its way into the cavities of the vesicles. Owing to its simplicity it seems to be an operation which should be more frequently employed, and seems indicated particularly in many of the chronic discharges which are not benefited by local treatment. After the injection the wound may be closed entirely, or, as Belfield practices it frequently, a tube may be left in the vas for repeated injections.

Seminal vesiculotomy and vesiculectomy may be performed either perineally or through the ischiorectal region. The perineal approach is by far the most commonly employed. The usual steps are as follows: with the patient in the lithotomy position, a Y-shaped incision is made somewhat similar to Young's perineal incision for prostatectomy; the apex of the prostate is exposed, then there are various modifications by different men. In order to bring down the vesicles, Young uses a tractor similar to the one he employs in prostatectomy work, excepting that it is longer and passes directly into the bladder from the meatus. By means of rotating this instrument against the symphysis, he is able to bring the vesicles nicely into the wound, and he is at liberty to undertake whatever he deems necessary.

Squier, after exposing the apex of the prostate, and by traction, is able to pull the vesicles down for a satisfactory exposure. After the apex of the prostate has been exposed, and either the tractor or the tape is inserted, the prostate is brought into the wound and the rectum separated, dissection being between the two layers of Denovillier's fascia. When the vesicles are exposed they will be found to be covered by the same fascial layers which cover the prostate. These must be divided before the vesicles can be attacked. After division of the fascia, the prostate, vesicles, and vas can be examined. There is usually a perivesicular exudate which occasionally makes exposure difficult. One can then open and drain the vesicles in any place desired, or can remove any part of the vesicular wall which may seem necessary. It is very frequently necessary also to incise the ampullæ of the vasa. This operation should be used on both vesicles and vasa. After one has incised the vesicles, he may consider his operation complete, or he may drain the prostate also at the same time if it seems advisable. Tubes and gauze drainage are used. The gauze should be placed into the incised cavities and the tube down to this region. The wound is partially closed by bringing together the levator ani muscles with catgut, and the skin with either catgut or silk.

Fuller's operation which was the first to be done on the seminal vesicles and the one which has been used probably more than all the others combined on account of the numerous operations which he has done, is an entirely different exposure from the one above described. He places his patients on a flat table in the knee-chest posture, with knees well separated, thigh and knee-joints sharply flexed, with an attendant at either side of the patient to maintain the position. Originally he used a rectal tampon, but latterly this has been discarded. His incision consists of two divergent cuts on either side of the anus. This incision is deepened through the fat and fascia, care being taken in deepening the transverse incision to keep far enough away from the anus so as not to injure the sphincter. The forefinger is inserted into the rectum, with the ball of the finger pressing down against the anterior rectal wall. He then cuts through the levator ani muscles and the visceral layer of the pelvic fascia. The finger also acts as a guide to prevent rectal injury. He then enters the space between the prostate and the rectal wall by blunt dissection with the finger. Fuller states that by this process of dissection it is easy to separate the rectal wall from the seminal vesicles and posterior wall of the bladder. After this is done, a grooved director is passed under the guide of the index-finger to the tip of the seminal vesicle. A scalpel is then passed in the wound, and the tip of the vesicle opened. This incision is then divulsed with the finger and the vesicle laid open. Fuller says that this operation is not bloody and no vessels require ligation. The cavities of the vesicles are packed with gauze and two soft rubber drainage tubes inserted between the gauze and the rectal wall. The wound is partially closed. The gauze is removed at the end of the fifth day, the drainage tubes on the ninth or tenth day. This operation, which has accomplished a great deal in the hands of its originator, is done entirely by the sense of touch, and is one which does not appeal to the average surgeon when he realizes that the field can be so completely exposed by the operation previously described.

The operation proposed by Voelcker which he claims gives the best approach, is through the ischiorectal fossa. The patient is placed on the abdomen, an incision made near the coccyx and passed through the ischiorectal fossa behind the beginning of the sacrum. In the first layer, the undermost part of the gluteus maximus muscle will be cut through with the ligamentum tuberoso-sacrum. In the second layer the levator ani muscle and the pelvic fascia appear, which cover

the rectum, prostate, and bladder. In this layer, numerous veins are to be seen, and a clean incision is made in the fascia between these vessels. One can draw the rectum away from the posterior part of the bladder, exposing first one, and then the other seminal vesicle. In this way, Voelcker states that free access to the vesicle is given and one can either incise or remove according to the indications. He has operated on the seminal vesicles by this method with no mortality. He observed no trouble with the healing of the wound but one hæmorrhage occurring in his experience.

Any of these operations can be employed for removing the vesicles and ampulla of the vas, seminal vesiculectomy. As the vessels come to the upper and outer pole, it is always well to begin the dissection in this locality and ligate the vessels first, then the vesicle may be shelled out of its bed, dependent upon whether or not there are dense adhesions, otherwise seminal vesiculectomy is the same as the previous operation. The perineal method has been employed by Cabot, Barney, Young, Squier, Legueu, Gueillot, and Ullman; the parasacral by Schade, Routier, and Rydygier.

Seminal vesiculectomy may be done by the inguinal route according to the method of Villeneuve, Baudet, and Duval. These authors incise the inguinal canal, open it throughout its length, then open the transversalis fascia and strip the peritoneum up until the vas is reached. This canal is followed to the tip of the vesicle by gentle traction. The vesicle is then seized with a forceps and removed. This operation is more complex and difficult, in that it is more likely to prove dangerous to the peritoneum, ureter, and pelvic plexus, as exposure is difficult.

Another method is the suprapubic approach, which was reported by Young in 1900 in the *Annals of Surgery*. With a midline suprapubic incision, the bladder is opened, and the ureters catheterized. Rectovesical — the peritoneum is stripped back from the bladder and the vesicles are reached in this manner. This operation is more complex and is not employed in the chronic inflammatory conditions, even by its author, who finds perineal approach much more adequate and simple. We have been unable to gather definite mortality statistics, but from personal communication with many, it is certain that the mortality is practically nil. Injury to the rectum has not been striking. There is, however, one decided consideration in operations upon the vesicles, and that is the crippling of the sexual powers in many cases. There have been many cases of impotence

occurring after these operations. This makes the more conservative surgeons loth to undertake the operation, reserving it for cases which have resisted all other treatment, or for cases of deforming arthritis. We have no statistics as to the comparative effects of vesiculectomy and vesiculotomy on the sexual powers.

The operations upon the vas deferens are usually those done in conjunction with other operations upon the genital tract, particularly in conjunction with epididymectomy. The principal operations upon the vas are: vasotomy, vasectomy, vasovasotomy, vaso-epididymotomy, and ligation for recurrent epididymitis.

Vasotomy is employed either for diagnosis or treatment. It has been used by Belfield, Cabot, Barney, Schmidt and Kretschmer, and many others for injections of silver solution into the vesicle in order to determine the pathological changes by means of the X-ray. Schmidt and Kretschmer have used skiography of the vas after the insertion of silver wire. Vasotomy for treatment of the seminal vesicles is employed particularly by Belfield.

Vasectomy has created considerable turmoil in the last few years from a medicolegal standpoint, particularly in reference to sterilization of the unfit. Doctors Sharp of Indiana and Bogart of Texas have been the most ardent advocates of vasectomy as a method of preventing the reproduction of criminals, degenerates, and defectives, and it is to be hoped that their ideas will be more universally accepted by the various states in the Union. The technique is very simple, done without any anæsthesia, even local. A small scrotal incision is made; the vas is isolated, ligated, and cut. The wound is dressed without suture. There is no mortality, and sterilization is sure. In 1900 Reginald Harrison proposed vasectomy as a means of relief for prostatic hypertrophy, and reported apparent success. His method was followed temporarily by other surgeons, but its death was soon pronounced and it has passed into oblivion.

In anastomosing the vas following injury or after excision of stricture, Christian and Sander-son have reported a satisfactory result by placing a piece of catgut in the lumen before closure. They claim that this prevents the tendency to stricture.

Vaso-epididymotomy, proposed by Doctor Martin of Philadelphia for the cure of sterility, is the most important surgical operation on the vas. The operation is of course not serious, but extremely delicate and not always effective. The technique as described by its author is as follows:

Before the operation is undertaken, strictures, posterior urethral lesions, and chronic inflammation of the seminal vesicles and vas should be cured. The patency of the vas from the epididymis to the prostatic urethra should be assured by an injection into the lumen of the vas of a watery emulsion of inert pigment which, when passed with the urine or expressed by massage of the vasal ampulla, may be recognized readily. This preliminary operation may be accomplished under local anæsthesia by means of either an ordinary hypodermic syringe, the needle of which is blunt, or the syringe used by oculists for washing out the lachrymal duct. The vas is held just beneath the skin by the fingers of an assistant; the line of incision is infiltrated; the vas is exposed, slit longitudinally, and from 20 to 30 drops of the injection are driven in. A large injection is likely to occasion severe pain at the base of the bladder (Belfield). If the pigment does not appear either in the urine, in the seminal discharge, or as a result of massage, anastomosis between the vas and epididymis will be futile.

The writer believes it is better to cut the vas obliquely, split it upward for a quarter of an inch, and sew this wide-stretched lumen to the opening made, either in the epididymis, or, if spermatozoa are not found there, in the testicle. The microscopist should be at hand to examine the fluid which exudes from the epididymis when it is opened. This opening is made by the pinching up of a very small portion of it in a pair of conjunctival rat-tooth forceps and snipping this portion off with a pair of eye-scissors curved on the flat. Usually a little blood and yellowish fluid will exude. This, taken up on a cover glass, will show innumerable spermatozoa. If spermatozoa are not present, other openings must be made into the epididymis or testicle until spermatozoa are found. The anastomosis between the cut ends of the vas and epididymis may be made by means of four sutures carried by fine curved eye-needles. Either silk or fine silver wire answers the purpose well. The suture is carried from without into the wall of the vas, and from within out of the wall of the epididymis. The tying down of the sutures completes the anastomosis. The approach to the epididymis and vas is made through the posterior scrotal wall. It usually does not require the application of a single ligature. The veins should be carefully avoided; otherwise troublesome and painful thrombosis will develop. Doctor Martin and others have reported satisfactory cures. Doctor Hagner of Washington reports an anastomosis of the vas

of one side to the globus major of the other side in a patient who had had a previous double vasopididymotomy.

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ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Ewing, J.: *The Incision of Tumors for Diagnosis.*
N. Y. M. J., 1915, cii, 10.

The author presents some of the conclusions which he has reached regarding the indications for microscopical study of tumors before operation. They are as follows:

1. The careful excision of a small piece of a malignant tumor by a sharp scalpel need not as a rule tend to disseminate or aggravate the disease. Dissemination of tumor-cells requires sufficient force to propel the cells along lymph-vessels or the opening of blood-vessels into which tumor-cells may be carried.

2. Incision through the unbroken skin is seldom admissible for the sake of diagnosis. The skin is the chief protection against infection which, when once established in a tumor, greatly aggravates the disease. It is especially to be avoided in sarcomata of bones, muscle, and fasciæ, tumors of the breast, and in all growths in which incision of the skin also involves incision through a tumor capsule. In all such cases, wherever possible, it is better to remove the entire tumor by an incision which permits of enlargement for a more extensive operation. An exception to the rule of the inviolability of the skin is found in tumors of lymph-nodes.

3. The clinical history is an essential basis for the correct interpretation of microscopical structure.

4. The prognosis of a tumor may to a considerable extent be based on the microscopical structure. This assertion may be successfully maintained just to the extent that the pathologist is able to interpret the clinical diagnosis from the microscopic section.

5. The use of frozen sections, while occasionally of decisive value, encourages hasty conclusions and readily leads to error. It is probably most often employed in operations on the breast where it is very prone to mislead. It should be replaced as far as possible by the gross examination of the whole tumor, which in the great majority of cases yields signs of malignancy or of benign qualities which are quite as conclusive as microscopical pictures.

6. No rigid rules can be safely followed in regard to when to remove a portion of a tumor for diagnosis. The conditions surrounding the growth of tumors are so variable that each tissue and organ must be considered by itself. EDWARD L. CORNELL.

Crile, G. W.: *The Two-Stage Operation for Cancer.*
Interst. M. J., 1915, xxii, 722.

In tabulating the end-results of 1,000 operations for carcinoma of the abdominal viscera from the statistics of Bunts, Lower, and his own work at the Lakeside Hospital, Crile is impressed by the number of deaths that are explained in no way by the patients' apparent condition before operation. These cases die with a succession of symptoms, in general as follows: loss of vitality, thirst, anorexia, depression, drowsiness, unconsciousness, and finally death in spite of the fact that the operative wounds are healing normally.

Laboratory researches offer a solution of these sequelæ. The author has shown that the stimuli which activate the organs which comprise the kinetic system, namely, the brain, adrenals, liver, thyroid and muscles, increase the hydrogen-ion concentration, or in other words, the acidity of the body. The normal reaction of tissues is alkaline and life is incompatible with a neutral or acid condition. In life the acid by-products of energy transformation are neutralized by the alkalies received from the food. In periods of stress during overwhelming activation the body-bases are unable to neutralize the excessive acid by-products sufficiently. Given a kinetic system already damaged by a long illness, the test imposed upon it is beyond its power of recuperation — hence death.

Carcinoma is one of the principal factors in this damage to the brain, adrenals, and the liver, so that in cancer cases the acid by-products resulting from the trauma of the operation, the anæsthesia, and from the emotional stimuli, might readily overwhelm the vital organs concerned in acid elimination. In addition there is normally in this disease a loss of appetite, hence the intake of alkalies is below normal. In order to combat this tendency, food, water, glucose, and sodium bicarbonate are pushed before the operation. Every possible psychic aid should be employed to diminish the emotional stress incident to the operation. Nitrous oxide is used as an anæsthetic rather than ether, as it causes less marked changes in the brain, adrenals, and the liver, and at the same time protects them to a certain extent from surgical trauma. Anoci-association is employed throughout the operation, because operations done under this method show no increase in hydrogen-ion concentration.

The author does not advocate the use of morphine

in such cases because its action does more harm by inhibiting the activity of the acid neutralizing mechanisms than by hindering the formation of acid by-products. Sodium bromide is substituted.

In the worst risks when acidosis is impending, the operation is divided into two stages so as to minimize the strain of the operation and extensive wound repair. This is especially useful in cases of pyloric stenosis where a gastro-enterostomy is done at the first stage so the patient may be able to take nourishing food immediately.

The two-stage operation makes possible also the differentiation of benign ulcers and cancer of the pylorus. The author advocates the two-stage operation in cancer of the rectum and also in cancer of the cervix. The two-stage operation for cancer of the larynx has been described elsewhere.

The ease with which the patient goes through the first operation later gives him a sense of equanimity when he comes to the second, so he no longer dreads the ordeal. The nitrous oxide anæsthetic has a marked part in this particular because the patient does not dread taking the gas, as there is an absence of unpleasant after-effects.

HARRY G. SLOAN.

ASEPTIC AND ANTISEPTIC SURGERY

McDonald, E., McMullen, C. G., and Stanton, E. M.: Sterilization of the Skin by the McDonald Solution. *Surg., Gynec. & Obst.*, 1915, xxi, 82.

Prevention of infection has always been the great aim of surgeons. The introduction of rubber gloves and the knowledge of their proper sterilization was quite a step to this end. But the proper sterilization of the hands before their introduction into the gloves, and the preparation of the skin of the operating field has always been a problem.

Scrubbing with soap, water, and brush and washing with ordinary disinfectants does not sterilize the skin. It merely reduces the number of bacteria.

MCDONALD, having made a bacterial study of the common methods of hand disinfection, which were proved to be inefficient, conducted a series of experiments extending over a period of ten years and finally found that a solution of commercial acetone, 40 parts, denatured alcohol, 60 parts, and pyxol, 2 parts, completely sterilized the hands within thirty seconds. This solution has more than forty times the germicidal value of carbolic acid. It is cheap and is non-irritating; it contains a fat solvent which causes the solution to penetrate. The results were controlled bacteriologically by contaminating the hands with a twenty-four-hour culture of one of the pus-forming organisms, allowing the culture to dry on and then disinfecting. The possibility of error in the bacteriological results from the antiseptic value of the excess of the solution was eliminated by washing in sterile water and plating the contaminated water with a culture in water to prove that there was no antiseptic action to mask the result. It is possible by this method to completely sterilize the skin of the hands and of the field of operation

within thirty seconds. Wounds of the skin made after this method of disinfection give more perfect healing than by other methods, as has been proven in the practice of several surgeons. It is possible to sterilize the hands so entirely and so quickly that rubber gloves are no longer necessary, because the hands can be re-sterilized after contamination in less time than it takes to remove dirty gloves and put on clean ones. The bacteriological results have been controlled by outside bacteriologists.

McMULLEN describes his method of using the solution as follows: The field of operation having been prepared, if possible, the night before by shaving and washing with green soap, water, and alcohol, it is then covered with a sterile towel and left until morning. At operation, the site is treated by rubbing with the McDonald solution for about two minutes. The hands of the operator and assistants are prepared by scrubbing with green soap, water, and alcohol, followed by a two minutes' treatment with the McDonald solution.

He states that during a period of eight months he operated upon 276 major cases prepared after this method with but 7 skin infections, a percentage of 2.54. These cases were as follows:

1. Clean appendectomy. Mild skin infection.
2. Inguinal hernia. Infection developed 16 days after operation, the pulse and temperature having been normal in the meantime.
3. Abdominal hysterectomy. Skin infection.
4. Bilateral purulent salpingitis. Infection of the space of Retzius occurred and was apparently due to spreading of infection from the tubes themselves.
5. Cæsarean section. A skin infection. This was a contaminated case, as the cervix had been gauze packed 48 hours before operation.
- 6 and 7. Clean laparotomies. These were done on the same day, and it was subsequently demonstrated that several operating-room nurses were suffering from sore throats, and the organisms recovered from their throats and from the wounds were identical.

From his experience with McDonald's solution, McMullen believes that it is the most efficient method of skin sterilization in use at the present time. It is non-irritating and does not burn the skin as often happened with the previous method of iodine preparation. Also, healing is accelerated about three days; a 10-day wound with this method appearing like a 13- or 14-day wound when iodine was used.

STANTON asserts that the ideal solution for skin disinfection should fulfill the following conditions: It must have a high degree of bactericidal activity. It should be generally applicable on all skin surfaces, wet or dry, including the hands of the operator. It must be capable of penetrating the crevices of the skin and dissolving oily substances in the skin to reach buried bacteria. It must be non-irritating and at the same time it should not lower the power of resistance of the tissues, nor by its presence delay the processes of wound repair. Measured by these standards tincture of iodine is by no means an ideal



The etherometer, an apparatus for automatically administering anaesthetics.

germicidal solution for skin sterilization; as a substitute he recommends the McDonald solution.

In his opinion the bactericidal properties of this solution equal that of a 40 per cent carbolic-acid solution, plus the germicidal action of the alcohol and acetone, or approximately ten times or more the germicidal strength of the tincture of iodine solution usually employed in surgery. The composition of this solution is theoretically correct, containing a powerful non-irritating germicide, with a fat solvent capable of bringing the germicide in contact with the bacteria. The method of application is simple, as the fat solvent, acetone, is contained in the solution which can either be painted on the skin like tincture of iodine or the skin may be actually scrubbed with the solution which serves as an excellent cleansing medium.

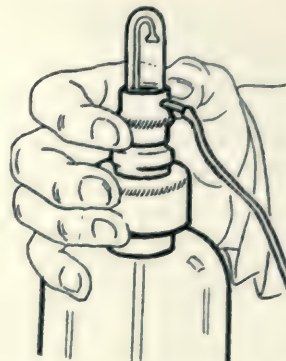
The solution is non-irritating, so that it can be regularly employed for disinfecting the surgeon's hands as well as the patient's skin. Water up to 10 per cent or more does not interfere with its action. Hence it is possible to use it on wet skin surfaces, such as those recently lathered for shaving, or the operator's hands after he has scrubbed them with soap and water. A point which deserves special emphasis is that the use of this germicidal solution does not interfere with the normal repair of surgical wounds.

Stanton believes that his results since using this solution have been much better than when he used the iodine method, as regards the absence of infections and particularly as regards prompt wound healing without evidences of chemical irritation.

ANÆSTHETICS

Montgomery, F.: The Etherometer, a Means of Mechanical Anaesthesia. *Am. J. Obst., N. Y.*, 1915, lxxii, 133.

Montgomery describes a device for automatically administering an anaesthetic and claims many



Showing feed, ether regulator, conducting tube, etc.

advantages for this method of mechanical anaesthesia over the ordinary methods of administering an anaesthetic by hand.

He calls his invention the etherometer and describes it as a simple apparatus working on the principle of the Vichy syphon. The anaesthetic is discharged from the container through a long flexible tube to the face mask where it is diffused upon the gauze. The rate of flow is very accurately controlled by means of a valve and the amount of anaesthetic that is passing to the mask may be observed through a glass sight feed at the top of the apparatus.

The author tells of the advantages of carefully initiating an anaesthesia and of maintaining constant percentages of vapor throughout the anaesthesia, and calls attention to the fact that most patients after they are anaesthetized require about the same percentage of anaesthetic to keep them anaesthetized. For this reason he maintains that mechanical anaesthesia is ideal anaesthesia. There are no abrupt changes. He believes that it is the rapid changes in percentage of anaesthetic vapor respired that cause many of the difficulties, such as excitement during early stages of anaesthesia, retching and vomiting and mucous secretion. With the hand method the anaesthetist never quite knows what percentage of anaesthetic vapor the patient is getting, and if he is giving a light anaesthesia he is liable to let his patient come out. The author states that by his mechanical method with the etherometer there is no guess work and that no matter how lightly the patient may be anaesthetized there is a feeling of security that the patient will not come out, because he is getting a constant percentage of vapor.

The author thinks that the vapor method as ordinarily practiced by means of a bottle containing the anaesthetic through which air is passed by a foot or hand pump, is unsatisfactory because there is a varying percentage of vapor obtained in this way.

Montgomery states that while his apparatus is primarily for the scientific administration of an

anæsthetic it is a labor-saving device and presents many advantages over the old method of holding the mask with one hand and administering the anæsthetic with the other. The hands are free. The jaw may be held up with both hands, the table may be adjusted without altering the anæsthesia; in fact, after an anæsthetic has been initiated very little attention is necessary. The author believes that if the operator has a knowledge of anæsthesia, he might almost administer his own anæsthetic without any fear of the patient being too lightly or too deeply anæsthetized. The use of a long flexible tube makes it possible to administer anæsthetics in neck and breast cases without interfering with the operator or his assistants.

Basing his conclusions upon over 400 anæsthesias administered with this apparatus, the author believes that the mechanical method of administration of anæsthetics is the best and most universally applicable of all methods of anæsthesia employed today.

E. A. BULLARD.

Graham, E. A.: Late Poisoning with Chloroform and Other Alkyl Halides in Relationship to the Halogen Acids Formed by Their Chemical Dissociation. *J. Exp. Med.*, 1915, xxii, 48.

The author recognizes the well-known fact that the prolonged administration of chloroform may be followed by certain well-marked morphological changes in the tissues, most conspicuous of which are œdema, fat infiltration, multiple hæmorrhages, and necrosis of the central portion of the liver lobule.

In this paper the view is developed that the changes characteristic of late poisonings with the above-named group, namely, œdema, multiple hæmorrhages, fat infiltration, and necrosis are ascribable to acids and to the fact that the amount of acid formed parallels the chemical dissociability of the drug outside of the body.

Favoring the view that acid is responsible for the changes are the following observations:

1. All the characteristic features of late chloroform poisoning have been produced merely by the administration of hydrochloric acid, except, however, for a different distribution of the liver necrosis.

2. The areas of central necrosis produced in the liver by the various substances under discussion give an acid reaction to neutral red.

3. Sodium carbonate in a hypertonic sodium chloride solution markedly inhibits the production of the lesions.

In favor of the view that the respective halogen acids play an important part are these facts:

1. After the administration of some of these drugs there has been noted an increase of the neutral salts of the halogen acids in the urine, a fact which indicates that the corresponding halogen acids must have been formed somewhere in the body.

2. The necrosis-producing powers of dichloromethane, chloroform, and tetrachloromethane parallel the amounts of hydrochloric acid which these substances theoretically can yield in their break-

down outside of the body. Likewise, the power to produce tissue changes exhibited by the ethyl compounds varies directly with the ease with which they form their respective halogen acids *in vitro*.

3. Ether and chloral hydrate which do not yield halogen acid in their breakdown in the body likewise also do not produce necrosis. They induce only œdema and fat infiltration to a less marked degree.

The suggestion is made that the halogen acid (hydrochloric, hydrobromic, or hydriodic acid), directly liberated in the process of dissociation, may be the important factor which makes the tissue changes seen in poisoning with chloroform and other alkyl halides so different from those following the administration of narcotic drugs of a different type.

GEORGE E. BEILBY.

Guerry, L.: The Avoidance of Shock During Surgical Operations. *J. So. Car. M. Ass.*, 1915, xi, 226.

The most important theories concerning the causation of shock are as follows:

1. The Yandell Henderson theory is that shock is due to a loss of carbon dioxide from the blood because of excessive breathing reflexly produced by painful stimuli, the so-called acapnia theory. The blood being so overcharged with oxygen, the necessity for breathing is temporarily suspended, when the time arrives for breathing there is not sufficient carbon dioxide available in the blood to stimulate the respiratory center. At the same time the blood-pressure falls and the rate of the heart beats increases. Death is due to a lack of oxygen, the store becoming exhausted before the carbon dioxide rises high enough to stimulate the center into activity again.

2. The Boise theory holds that shock is due to cardiac failure.

3. The contention of Meltzer is that oligæmia is the real pathology of shock.

4. Crile and Mummery contend that shock is an exhaustion of the vasomotor center due to excessive stimulation, whether due to trauma, fright, loss of blood, or mental anxiety. A number of competent observers have disputed their contentions as to the dilatation of the arteries and the exhaustion of the center during shock.

It is apparent that none of these theories contain all of the truth, and probably all of them contain some of the truth. Further, it must be accepted that much can be done to prevent shock, but not very much to cure it. Consequently the fight against the condition must begin as soon as the patient comes under the surgeon's care.

The operation is not the most important thing, but rather a thorough understanding of the case and thorough preparation for the coming ordeal. The physical condition must be built up, mental anxiety and apprehension allayed, and the general condition brought to that margin of safety where the additional effect of an operation can be borne with a reasonable certainty of a successful outcome.

At the time of operation a sixth of a grain of morphine with 1/150 grain of atropine is given before the patient is taken to the operating room. The anæsthesia is begun with nitrous oxide and later changed to ether. Loss of blood must be carefully guarded against and the actual work must

be done as rapidly as possible. The author does not doubt that Crile's method (local blocking of the operative area with novocaine) is useful and in many selected cases he uses it, but he believes it prolongs the operation time, and in the great majority of cases, is unnecessary. E. K. ARMSTRONG.

SURGERY OF THE HEAD AND NECK

HEAD

Davis, G. G.: A Plastic Operation for Buyo Cheek Cancer in Its Early Stage; a Further Report of Buyo Cheek Cancer Cases. *Surg., Gynec. & Obst.*, 1915, xxi, 48.

The pathological condition which this operation aims to meet is an epithelioma on the buccal aspect of the cheek with regional metastasis in the sub-maxillary lymphatic glands.

This epithelioma is common among the people of the Philippine Islands and is caused by long continued use of the buyo chew, which is a combination of the buyo leaf, betel nut, lime, and tobacco.

The incisions employed in this operation may for convenience of description be divided into three groups: First, a cut is made from the angle of the mouth to the lower border of the ramus of the jaw and extending to the angle. The aim of this is to give access for removal of the growth within the oral cavity. A second circular incision is made on the side of the neck to form a flap with pedicle or hinge to cover the defect of mucosa caused by the removal of the growth and thus give an epithelial lining within the oral cavity. The third group of incisions is made lower down on the neck to form flaps to slide up and cover the area denuded by the turning up of the circular flap.

This operation, of course, is only indicated in early cases when the growth is more or less limited to the mucous surface of the cheek.

The result is good. The seventh nerve is not injured, the facial expression is preserved, and but a single line from the angle of the mouth mars the cosmetic appearance of the face. A high collar shields the neck scars.

Cushing, H., and Goetsch, E.: Hibernation and the Pituitary Body. *J. Exp. Med.*, 1915, xxii, 25.

The purpose of this study by Cushing and Goetsch is to point out that a seasonal wave of physiological inactivity on the part of certain of the glands of internal secretion may well account for the phenomenon of hibernation. As a result of their studies they find that a train of symptoms coupled with retardation of tissue metabolism, with inactivity of the reproductive glands, not only accompanies states of experimentally induced hypophyseal deficiency, but is equally characteristic of clinical states of hypopituitarism. The

more notable of these symptoms are a tendency, in the chronic cases, toward an unusual deposition of fat, a lowering of body temperature, slowing of pulse and respiration, fall in blood-pressure, and oftentimes a pronounced somnolence.

These symptoms bear a marked resemblance to the physiological phenomena accompanying the state of hibernation which have heretofore been unsatisfactorily ascribed solely to extracorporeal factors; namely, a seasonal deprivation of food and low temperature.

In a series of hibernating animals (woodchucks) it has been found that during the dormant period histological changes are apparent in many of the ductless glands. The most notable of these changes occur in the pituitary body, as previously observed by Gemelli. The gland not only diminishes in size, but the cells of the pars anterior, in some animals at least, completely lose their characteristic staining reactions to acid and basic dyes. At the end of the dormant period the gland swells, and as the cells enlarge they again acquire their differential affinity for acid, basic, and neutral stains, and at the same time karyokinetic figures may appear.

On the basis of these observations the authors believe that hibernation may be ascribed to a seasonal physiological wave of pluriglandular inactivity. The essential rôle may perhaps be ascribed to the pituitary body, not only for the reason that the most striking histological changes appear in this structure, but also because deprivation of the secretion of this gland alone of the entire ductless gland series produces a group of symptoms comparable to those of hibernation.

GEORGE E. BEILBY.

Küpferle and Szily, A. von: Radiotherapy in Tumors of the Hypophysis (Über Strahlentherapie bei Hypophysentumoren). *Deutsche med. Wchnschr.*, 1915, xli, 911.

Küpferle and von Szily describe a case of tumor of the hypophysis in a man of 65. The first examination showed atrophy of both optic nerves, beginning concentric limitation of the visual field, and hemianopic pupil reaction. A month later the tumor was removed through the orbit; the tumor was malignant and it was impossible to remove all of it. After about six months vision began to fail rapidly and the röntgen shadow of the tumor increased in size. Radiotherapy was begun, but in spite of the treatment sight kept on failing

until the patient lost his sight entirely. Treatment was kept up, however, and after about two months the sight began to return. His sight is good now and the pupil reactions are normal; this condition has persisted for 7 months. External treatment was given with hard filtered X-rays, several fields being irradiated at once and the rays directed toward the sella turcica. Mesothorium treatment was given at the same time through the mouth.

Béclère reports four cases of tumor of the hypophysis successfully treated with röntgen rays, and Gunsett reports one. From these and their own case the authors conclude that radiotherapy is indicated in tumors of the hypophysis, not only as an after-treatment following operation, but as an independent treatment in suitable cases. A. Goss.

NECK

Miller, S. R., and Fairbank, R. E.: Complement Fixation in Thyroid Diseases. *Bull. Johns Hopkins Hosp.*, 1915, xxvi, 245.

Of the four functional tests for recognizing normal or abnormal activity of the thyroid gland, Roseo's complement-fixation test was studied by the authors as the most likely to yield conclusive results. The serum in 58 cases of various types was tested against each of 19 thyroid antigens, each being in five different dilutions. The antigens were prepared from thyroid tissue secured at the time of operation from patients suffering with Graves' disease. The results were consistently negative in all except luetic cases.

The authors conclude that the complement-fixation test of Roseo is of no clinical value in determining the existence of hyperthyroid states or conditions of dysthyreosis.

The other three functional tests are briefly reviewed. It is stated that they possess no clinical value, although they are of scientific interest. The tests referred to are as follows:

1. Acetonitrile test. Reid Hunt demonstrated that white mice fed on thyroid extract become much more resistant to the toxic effects of hypodermic injections of acetonitrile, a drug which slowly liberates hydrocyanic acid.

2. Hyperadrenalinæmia. Fraenkel showed that there is an increase of adrenalin in the blood in exophthalmic goiter.

3. Abderhalden's dialysis test.

EUGENE H. POOL.

Benjamin, A. E.: Goiter Operations with Simplified Technique. *Surg., Gynec. & Obst.*, 1915, xxi, iii.

The technique of operations for goiter has not been modified by surgeons, in general, for a number of years.

The operation in competent hands is now quite safe in simple goiters, but it seems that there should be some improvement in the technique in order to make the operation more simple and to take

into consideration the cosmetic effect of an operation, as well as the avoidance of further trouble.

The operation previously described in surgical literature, such as the Mikulicz resection, is not altogether new and is particularly applicable in the group of cases where there is more or less enlargement of both lobes, either of the cystic, colloid, or adenomatous type. It is this operation which the author has attempted to modify and elaborate in his work, and reports in this paper.

In witnessing the usual operation for goiter and viewing such work from a critical standpoint, the great number of forceps which seem to be necessary to control hæmorrhage is noticeable.

There is frequently an incomplete exposure of the gland and therefore some difficulty in controlling hæmorrhage, in removing all of the diseased portion or a sufficient amount of the gland, and in some instances, overlooking the retrotracheal or other portion abnormally located.

The disturbed symmetry of the neck after many operations is quite noticeable.

Some of the advantages of this operation are:

1. Complete control of hæmorrhage from the gland as well as from other tissue while operating.

2. The operation is accomplished by the use of the fewest number of forceps.

3. There is complete exposure of the gland and positive identification of the tissue.

4. The operation is done with the greatest rapidity, ease, and simplicity.

5. There is no possible chance of injury to the essential structures, such as the parathyroids or recurrent laryngeal nerve.

6. By this operation it is possible to remove all of the diseased gland tissue and to preserve the healthy functioning portion near the capsule.

7. There is no unnecessary traumatism or shock.

8. There is less escape of thyroid secretion at the time and after the operation.

9. The ligatures controlling hæmorrhage of the blood-vessels of the gland are supported by the presence of the more dense substance, the capsule.

10. It is done almost as quickly as the ligation operation with more permanent results.

11. There is no retraction of the muscles of the neck and possible scarring therefrom; and tracheal collapse, which occurs in certain cases when an unilateral operation is performed at the time, is unlikely.

12. The least possible scar results after this operation and the neck is quite symmetrical.

13. There is very little liability of further disturbance after this operation.

14. It permits little or much of the gland tissue to be removed and cannot possibly be followed by tetany.

15. There are few or no raw glandular surfaces exposed to overlying tissue after the operation, the capsule completely enveloping the remaining portion.

16. The remaining gland substance nearly approaches the normal in size and function.

Starck, H.: Indications for and Results of Operation for Basedow's Disease (Indikationen zur Operation des Morbus Basedowii und Operations-erfolge). *Deutsche med. Wchnschr.*, 1915, xli, 822.

Starck reports on 450 cases of Basedow's disease observed during the past few years, 69 of which were operated upon. About 30 per cent of the cases operated upon recovered; there was improvement in 30 or 40 per cent, and in the rest there was either no result or the condition became worse. There is an operative mortality of 9 per cent. Some of these deaths are due to persistent thymus, and in every case examination should be made to see if there is a thymus; if so the vessels should be ligated or the thymus resected. The choice of an anæsthetic is important in determining the results of operation. Patients with pronounced nervous, myasthenic and psychic symptoms should be given general anæsthesia; others should be operated upon under a local anæsthetic.

Operation is contra-indicated in cases with status lymphaticus; if an operation must be performed it should be done under local anæsthesia. In many cases operation is only a preparatory measure for internal treatment. The most unfavorable time for an operation is during the progressive stage of the disease; operation should be deferred until it is stationary.

The best cases for operation are the classical Basedow cases and the cases of so-called Krause's goiter heart. Little can be expected from operation

in the cases with nervous, myasthenic and psychic disturbances with little involvement of the cardiovascular system. The size of the goiter has little to do with the prognosis of operation. Small, soft goiters are often more difficult to deal with than large, hard ones. The blood picture has nothing to do with the indications for operation and is not particularly affected by the operation.

A. Goss.

Bull, P., and Harbitz, F.: A Case of Osteomalacia with a Tumor of the Parathyroid Gland (Et tilfælde av osteomalaci med svulst av glandula parathyroidea). *Norsk. Mag.f. Lægevidensk.*, 1915, lxxvi, 417.

A woman of 26 had had four children in four years, all of whom she had nursed. Soon after the birth of her last child, in November, 1912, nephritis developed. In March, 1913, she began to have severe pain in the back and legs, and by November, 1913, could not walk. She died in July, 1914. A colored plate is given showing the appearance of the bones. A tumor as large as a walnut was found in the left lower parathyroid gland. It is probable that the parathyroid glands have something to do with calcium metabolism, for similar tumors have been found in other cases of osteomalacia, but they have also sometimes been found in cases without osteomalacia. It is probable that there was an etiological connection in this case, but its exact nature is unknown.

A. Goss.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Bovée, J. W.: The Use of the Galvanocautery Knife for Excision of Mammary Tumors for Microscopic Diagnosis. *Am. J. Obst.*, N.Y., 1915, lxxii, 25.

The author believes that since so many of the nodules which appear in the breast are malignant, all breast tumors should be considered malignant until proved benign. Until greater confidence is created in the Abderhalden and other serum tests for cancer, resort to surgical measures to procure specimens for microscopical diagnosis will have to be made.

Recognizing the danger of contamination during resection and of lymphatic stimulation incident to such manipulations various plans of obviating these dangers have been employed. In reference to securing frozen sections in cases of doubt, Rodman says that there is no danger in such a practice if a hot iron is used at the time, even if the case is cancerous. Babler employed Harrington's antiseptic solution from one half to one minute in the resected wound. Formaldehyde has been employed similarly.

Bovée has adopted the plan of cutting the tissues a short distance with a sharp knife, and with the flat edges of the cautery knife immediately sealing

to a considerable depth the sides and bottom of the wound. The use of the knife is again resumed, to be promptly followed by the cautery as before. This process is followed until the tissue desired is entirely removed, leaving behind a crater with charred boundaries. The hot oil that oozes from the tissues during this procedure is taken up with small pledgets of cotton or gauze on forceps and discarded. If the frozen sections are reported to be malignant a radical operation is at once performed. If it is reported to be benign the surgeon may yet decide from a consideration of the clinical evidence to perform a radical operation. If the operation is not to be extended the wound margins are trimmed of all cooked tissue and proximal portions of severed milk ducts and the wound closed completely with sutures.

The author has performed the J. Collins Warren operation entirely with the knife and cautery, as above mentioned, with satisfactory results.

C. H. DAVIS.

Frank, L.: Cancer of the Breast. *Am. J. Surg.*, 1915, xxix, 244.

Excluding uterine and gastric carcinomata the breast ranks highest as a favorite site for malign-

nant neoplasms. If it be granted that the only cure for mammary carcinoma is radical surgery, then the diagnosis should be perfected and the patient subjected to operation at the earliest possible moment. The author is convinced that as soon as discovered every mammary tumor should be surgically removed regardless of the age of the patient and the apparent clinical benignity of the growth. A very careful diagnosis should be made, and, if there is any doubt at all, a microscopical examination of a frozen section should be made, before proceeding with the radical removal of the breast. This preliminary incision should be immediately cauterized to prevent the contamination of fresh fields. In the diagnosis the so-called "cancer age" must always be borne in mind.

He emphasizes the importance of post-operative X-ray treatment which should begin immediately after removal. Where adjacent lymphatics are extensively implicated it should be repeated on alternate days for about three weeks. He also emphasizes the fact that operations performed under gas-oxygen anæsthesia and the anoci-association method of Crile have been very successful.

Of 48 cases he has operated upon for mammary carcinoma in the last seven years, 18 are still living after three years. Eight are living without recurrence or metastases after the expiration of five years. Fourteen died of local recurrences or metastases: 1 of liver metastasis; 1 of mediastinal recurrences; 3 of spinal metastases; and 1 of pleural metastasis. One patient had recurrence in the scar, three years after operation, but gave no further evidence of the disease after X-ray treatment. Vertebral recurrences were noted in 4 cases. These 4 cases emphasize the fact that development of "rheumatic pains" in the hips, back, legs, etc., a year or more after excision of mammary carcinoma should be regarded as suspicious of spinal recurrence. In such cases the X-ray is the most important diagnostic agent.

C. D. HOLMES.

Jackson, J. N.: The Imperative Necessity of Early Diagnosis and Early Operation in Cancer of the Female Breast. *Am. J. Surg.*, 1915, xxix, 241.

The author discusses the necessity of early surgical treatment of cancer of the breast and gives some points regarding the early indirect as well as the direct diagnosis of this condition.

"Practically one half of all the women who to-day die of cancer of the breast do so needlessly," he says.

While a non-operative management of cancer has long been hoped for by surgeons everywhere, surgical intervention alone is to be looked upon with any real value in the cure of cancer. Statistics regarding cancer of the breast were compiled by the American Surgical Society in 1907 from several of our largest surgical clinics as well as from the experience of a number of surgeons of the widest experience. These statistics go to show that from 25 to 40 per cent of cases operated upon were

permanently cured. Jackson concludes from this statistical study that at least 50 out of every 100 deaths from cancer of the breast could be avoided if the patients could only be diagnosed and operated upon early enough. In making a diagnosis of a lump in the breast, we must not wait for the patient to complain of pain for that is a late symptom when surgery will do little lasting good.

As 80 to 90 per cent of all breast tumors are malignant none should be passed without suspicion. This type of cancer is most common between the ages of 45 and 50. Heredity, lactation, and injury probably have little to do with the origin of this trouble.

In palpating the breast for the presence of nodules it is highly important that the hand be laid flat against the breast so that the tumors, though small, may be felt against the bony chest wall. Then, too, a comparison of the two breasts is important. All tumor growths should be removed for accurate diagnosis, and sections should be frozen at the time of removal so that a radical operation may be done immediately if necessary.

C. D. HOLMES.

Fisher, M. K.: The X-Ray in Carcinoma of the Breast. *Med. Rec.*, 1915, lxxxviii, 17.

Fisher reports his experience in 92 cases of cancer of the breast, in which X-ray exposure followed operation, and on which a time-limit of three years or more has elapsed since operation. The subsequent history of 22 patients was not obtainable. Reports of the other 70 cases are as follows:

Dead.....	16
Living with recurrence.....	14
Dead of causes other than cancer.....	2
Living and apparently well.....	38

Several of the patients with or without recurrence keep up routine X-ray treatment.

The cases reported on fairly represent all types of breast cancer.

Fisher's percentage of non-recurrence after 3 years, i.e., 53 per cent, compares with 44 per cent in St. Mary's Hospital, Rochester, Butlin's 50 per cent, and Halsted's older statistics of 50 per cent of cures. The author states that the percentage of permanent cures of those treated at the present time is considerably larger than the statistics of the older surgeons, whose average of permanent cures is a trifle over 20 per cent.

The author is of the opinion that following the operation the X-ray should be used early and in large doses. The treatment should usually begin within one week. The cross-fire method should be used at four or five different angles. Routine treatment should be continued at intervals for years.

The author concludes that in the absence of any specific remedy for the cure of cancer, at the present time, the status of present-day treatment for carcinoma of the breast resolves itself, first and foremost, into early and wide removal of the diseased organ and all secondarily involved tissues, followed

by thorough, persistent, and continuous X-ray exposures over the site of operation and all contiguous areas.

H. E. POTTER.

Geist, S. H., and Wilensky, A. O.: Sarcoma of the Breast. *Ann. Surg., Phila.*, 1915, lxii, 11.

The authors describe the different types of sarcoma of the breast, give a brief clinical history and a short résumé of the literature.

In 558 cases of breast tumor, 22, or 3.9 per cent, were sarcomata, the predominating types of which were fibromyxosarcoma and spindle-cell sarcoma. Round-cell sarcoma, cystosarcoma phylloides, giant-cell sarcoma, and perithelioma were found frequently, in the order named.

Following this is a complete macroscopical and histological description of the different types of sarcoma.

No differential points were noted in the symptomatology, to aid in clinically distinguishing between the types. The average age was 39. All were married and the majority had borne children. In 2 cases — fibromyxosarcoma and cystosarcoma phylloides — there was a history of trauma. In 3 cases there was a history of previous breast tumor, 2 of which were in the opposite breast. In 57 per cent the right breast was involved, in 33 per cent both, and in 10 per cent the left breast was the seat. The tumors all grew rapidly, varying in existence from one week to nine years. In one third of the cases the skin was fixed to the tumor and in all it showed dilated and radiating veins.

Pain was a prominent symptom in one third of the cases, and in two thirds of these the skin was involved. There was not much tendency to infiltrate the deeper tissues and the lymph-nodes rarely showed metastatic involvement.

There have been 435 cases reported in the literature since 1858. Thirty-one per cent were of the spindle-cell type, and 14 per cent the round-cell type.

Heredity plays a very small rôle in the etiology. Trauma was noted in about 10 per cent. Eighty per cent were married. Only 9 cases were found in males and the average age was 40.

The first symptom noted is a small hard mass which rapidly enlarges. These masses are usually single and seldom painful, except late. The skin and deep parts are rarely involved, and the tumor is seldom adherent. The nipple is retracted infrequently and cachexia is rare. While the lymph-nodes are enlarged, metastatic involvement is seldom found.

The prognosis is best in cystic tumors, 75 per cent of which are cured even with simple excision. It is least favorable in the round and spindle-cell variety. On the whole, the prognosis is better than in carcinoma. As to treatment, the consensus of opinion is for radical operation, but even then 33 per cent of the collected cases show local recurrences. However, the statistics of all cases collected show 63 per cent cured.

PHILLIPS M. CHASE.

Cicconardi, G.: Artificial Pneumothorax (Sul pneumotorace artificiale). *Riforma med.*, 1915, xxxi, 764.

Cicconardi finds that artificial pneumothorax is an excellent method of treatment in a limited number of cases; only about 2 to 3 per cent of cases of tuberculosis are adapted for it, however. Rapidly acute cases should be excluded, as well as those with cheesy lesions on a hereditary basis. It is indicated in the chronic forms, preferably in the infiltrating stage, where the destructive lesions are unilateral and only just begun. It is an ideal method of treatment for incipient infiltration. It may also be used in cases with cavities if the cavities are small and not superficial; if they are superficial the overlying lung tissue may be ruptured by the pressure.

The treatment is indicated in patients with hæmoptysis, as it is very effective in stopping bleeding from the lungs. It is contra-indicated if there are adhesions of the pleura or there is tuberculosis in other parts of the body, especially in the intestines. Tuberculosis of the larynx is not a contra-indication. Another contra-indication is cardiovascular disease. The treatment should be given as soon as it is found that destructive lesions have begun, not only for the sake of the patient but to prevent the dissemination of tubercle bacilli in his sputum.

A. Goss.

Burnand, R.: Late Results of Forlanini's Method (Les résultats éloignés de la méthode de Forlanini). *Rev. méd. de la Suisse Rom.*, 1915, xxxv, 256.

Burnand reviews the results obtained with Forlanini's method of artificial pneumothorax in pulmonary tuberculosis at the sanitarium of Leysin at which place about 100 cases have been treated since October, 1911. The histories of three of the cases are given in detail. Most physicians who have tried the method agree that the immediate results are good, but many doubt its ultimate efficacy. The cases cited show that it brings about not only temporary improvement, but permanent cure.

One case was that of a young man of 19 with a cheesy tuberculosis of the left lung that had continued to progress in spite of two months' treatment in the sanitarium. Within three weeks after the application of artificial pneumothorax the temperature had become normal and in ten months clinical cure was complete. The pneumothorax was kept up for two years, during which time he was able to resume his work. Eight months after treatment was stopped he was called to the front and has served through the campaign, with no return of the tuberculosis, although he has taken long marches in the rain.

It is true the results have not been so brilliant in many cases, and that there has been a considerable mortality, but in considering the statistics it must be remembered that only cases that are hopeless by any other method are given this treatment. It is comparable to surgery in malignant disease.

No one would hesitate to remove a cancer surgically because it might recur. In the cases where the method has failed the failure is probably due to the fact that other lesions elsewhere, perhaps in the other lung, have developed after the pneumothorax, or that there were pleural adhesions preventing complete compression of the lung. But even if the numerous failures are considered the method has more cures and partial cures to its credit than any other method of treating this class of cases, and the results may be improved by making every effort to secure an earlier diagnosis of the cases adapted for it before secondary foci develop that may later prove fatal.

A. Goss.

TRACHEA AND LUNGS

Ingalls, E. F.: Fluoroscopic Bronchoscopy. *Med. Rec.*, 1915, lxxviii, 56.

In this, a supplemental report to the one published in 1914, the author states that the former article was liable to misinterpretation by the general practitioner, who might conclude that with the aid of the fluoroscope the operation might be safely attempted by almost anyone, which unfortunate impression would lead to disastrous results in many cases.

Fluoroscopic bronchoscopy is an aid to the well-qualified bronchoscopist in certain difficult cases where the usual procedure has failed, as for example in the following instances:

1. Where there is so much mucous, pus, or blood that it is very difficult or impossible to see the foreign body.
2. Where granulation tissue covers the foreign body.
3. Where the foreign body is hidden in an abscess cavity.
4. Where a stricture has formed proximally to the foreign body.
5. Where the foreign body is lodged in a bronchus going to the upper lobe of the lung, or in any bronchus where it cannot be exposed by ordinary methods.

To ascertain whether the forceps is in the same cavity or bronchus as the foreign body, it should be moved laterally back and forth, and its position shifted until the foreign body moves with the end of the forceps.

Otto M. Rott.

Blecher: Gangrene of the Lung from Bronchial Stones. (Über Lungengangrän bei Bronchialsteinen). *Mitt. a. d. Grenzgeb. d. Med. u. Chir.*, 1915, xxviii, 619.

In most cases of stone in the bronchus not complicated by tuberculosis the stones are coughed up and recovery follows; sometimes they cause severe hæmoptysis and still more rarely gangrene or abscess. Blecher reviews three cases from the literature in which stones were followed by gangrene. He describes a fourth case in a man of 45 who coughed up several concretions the size of peas. No

tubercle bacilli were found. The fifth and sixth ribs were resected and there was some improvement, but röntgen examination still showed a number of small shadows, probably caused by concretions. The further course of the case is not known.

The author describes a case of his own in a man of 23 who had cough and pain in the right side. Röntgen examination showed an ill-defined shadow passing imperceptibly into the liver shadow. On puncture putrid pus was emitted. Operation exposed gangrene of the right lower lobe and pyopneumothorax. The base of the lung had become adherent to the diaphragm and bacteria had made their way through into the peritoneum though there was no visible opening. No tubercle bacilli were demonstrated. The eighth rib was resected and a large amount of pus removed. The patient improved at first, but peritonitis developed and he died. Autopsy showed a stone in the bronchus in the middle of the gangrenous area.

Ordinarily bronchial stones give a sharp shadow in the röntgen picture, but in cases of gangrene they may be masked by the shadow of the gangrene. The prognosis depends on the severity of the gangrene; so far as the stone is concerned, the prognosis is good, but better in cases of solitary than of multiple stones.

A. Goss.

PHARYNX AND ŒSOPHAGUS

McKinney, R.: Simple Inflammatory Stenosis of the Œsophagus. *Laryngoscope*, 1915, xxv, 354.

Recent investigations due to the development of œsophagoscopy have demonstrated the fact that chronic stenosis of the œsophagus can result from a simple inflammatory condition, frequently a localized inflammation of some kind. Inflammatory stenoses localize at the contracted extremities of the œsophagus or at the site of the crossing of the arch of the aorta and are established by a simple thickening of the wall and circular cicatricial contraction consecutive to œsophagitis, or by spasms, terminating in permanent stenosis.

These cases can be successfully treated by gradual dilatation applied through the œsophagoscope, without anæsthesia; therefore the author advocates a routine endoscopic examination of the œsophagus in all cases of difficult deglutition which has continued for any length of time.

ELLEN J. PATTERSON.

Kelling, G.: Suppuration of Bronchial Glands with Perforation into the Œsophagus (Über Bronchialdrüsenentzündung mit Perforation in den Œsophagus). *Arch. f. Verdauungskr.*, 1915, xxi, 35.

Three cases are described in which a correct diagnosis was made of suppurating bronchial lymph-glands perforating into the œsophagus. The patients were young adults who exhibited signs of scrofula and were exposed to unusual inhalation of dust or soot. There were no symptoms to attract attention until perforation occurred, and then

crumbly, blood-stained products of suppuration, or pigmented, ill-smelling masses came up in the mouth when the patient reclined, but there was no vomiting. Other differential symptoms are pains between the shoulder-blades, coughing without expectoration, rise of temperature, and the röntgen findings. Sometimes there is difficulty in swallowing and salivation. Œsophagoscopy is apt to be dangerous. Gastric ulcer must be excluded. The author explores the œsophagus with a sponge-holder, as he explains in detail; some of the pus sticks to the sponge.

A cancer in the œsophagus generally causes more or less stenosis, while stenosis is exceptional with lymph-gland trouble. Girard advises temporary gastrostomy to leave the œsophagus completely at rest or permit its thorough rinsing and draining out, draining away the fluids through a tube in the opening into the stomach. In one case Rehn opened the mediastinum and removed tuberculous glands that compressed the œsophagus and bronchi, and the young woman recovered; there had been no perforation in this case. Kelling does not believe this is practicable when perforation has already occurred, but it might be possible to aspirate out the contents of the abscess with suction, as with Bier's suction pump devices. A long oval bulb, studded with holes, on the end of a catheter connected at the other end with a rubber bulb might answer the purpose, the patient breathing deep as the suction is applied.

In all the cases described the clinical picture suggested gastric ulcer at first, except for pain in the back at the fourth thoracic vertebra; sometimes the spinous processes along here were tender.

Fibers of the vagus are liable to be compressed and cause reflex pain and other disturbances, even paralysis of the vocal cords or laryngospasm. A. Goss.

Gaub, O. C., and Jackson, C.: Œsophageal Diverticulum; a New Operation for Its Cure. *Surg., Gynec. & Obst.*, 1915, xxi, 52.

The authors have devised a plan of operation in which an œsophagoscopist assists the surgeon by pushing the diverticulum out into the external wound by means of the œsophagoscope inserted through the mouth. The bottom of the pouch is then seized with forceps by the surgeon, after which the œsophagoscope is withdrawn from the pouch and inserted deeply into the subdiverticular œsophagus. It then only remains for the surgeon to amputate the saccular redundancy.

The advantages of the operation are:

1. Time-saving, which is especially important in the senile, feeble patients usually subject to diverticulum.
2. Ease of finding a small diverticulum, which, when empty, as it must be for operation, is often difficult to find.
3. Accurate removal of just the proper amount of redundancy to cure the trouble and prevent recurrence, without risk of stricture.

The œsophagoscopist has his own sterile organization entirely independent of that of the surgeon. The authors advise the use of intratracheal insufflation ether anaesthesia which not only removes the anaesthetist far from the field of operation but renders the patient safe from the risks of glottic spasm so often induced by irritation of the vagus or recurrent.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Schepelmann, E.: Clinical Experience with Plastic Drainage for Ascites (Klinische Erfahrungen mit meiner Methode der plastischen Ascitesdrainage). *Arch. f. klin. Chir.*, 1915, cvi, 663.

Schepelmann describes the experimental work that led up to his present clinical method of draining in ascites by means of calves' aortas. He gets the aortas fresh at the slaughter house and draws them over glass tubes, the tubes being removed after a few days' hardening in 10 per cent formalin. The hardened arteries are then kept in jars in the formalin solution until they are needed. He gives details, with illustrations of four cases.

The operation is performed under local anaesthesia, one drain being inserted on each side, one end being passed into the peritoneal cavity. The tube slopes sharply downward and the lower end lies in the subcutaneous cellular tissue. The fluid flows out through the tube and is absorbed by the subcutaneous tissue. In all the cases the patients

were very much relieved. Two of them died later from the disease which caused the ascites and another is still under observation and doing well.

This method is indicated only in cases where the portal circulation is interfered with, as in cirrhosis of the liver, passive congestion of the liver, syphilis, and tumors of the liver. It is contra-indicated in inflammatory forms of ascites, such as tubercular peritonitis, and in cases where there is general sluggishness of the circulation, as in nephritis and uncompensated heart disease; for in these cases the abdominal walls are not capable of taking up the fluid. A. Goss.

Brunzel, H. F.: Cryptogenetic Peritonitis, with Special Reference to the Manner in Which the Peritoneum Becomes Infected (Über die kryptogenetische Peritonitis, mit besonderer Berücksichtigung des peritonealen Infektionsmodus). *Arch. f. klin. Chir.*, 1915, cvi, 233.

Brunzel gives the histories of 10 cases of so-called cryptogenetic or spontaneous peritonitis,

and makes a study of the bacteriological findings and the route of the infection. He finds that in the majority of cases the pneumococcus is the causative agent, though staphylococci and streptococci may sometimes be found. The infection takes place, chiefly, if not exclusively, through the blood stream. He shows the improbability of its coming from the intestine, which many authors believe to be the source of infection.

That infection through the blood stream is possible is shown by another of the author's cases in which peritonitis followed a small abscess in the axilla, which resulted from an erysipelas of the upper arm. There was no other possible way for the infection to be transmitted in this case, but he does not include it in his cases of cryptogenetic peritonitis, because the point of origin was known. These cryptogenetic cases of peritonitis are really metastatic peritonitis, being suppurative metastases from a general septic blood infection.

In the course of pneumonia abdominal symptoms are often observed which are due to irritation of the peritoneum by pneumococci, but it is only in exceptional cases that the bacteria overcome the natural resistance of the peritoneum and a true peritonitis develops. Early operation is indicated, and the incision should be the usual incision for appendicitis. This makes it easy to examine the appendix and remove it if it is found to be the source of the infection. The prognosis is bad in spite of operation.

A. Goss.

Gerster, A. G.: Perienteritis Membranosa. *Ann. Surg.*, Phila., 1915, lxii, 74.

Gerster throws a new and interesting sidelight on the causation of bandlike formations in the abdomen, reporting a very interesting case.

There are three theories as to the formation of bands and membranes: (1) Lane's theory is that of traction exercised by the weight of the intestine upon the suspensory structures. (2) Mayo, Cheevers, and Flint assume that most of these bands are of congenital origin. (3) Virchow and Pilcher with others consider inflammation either by direct bacterial invasion or from absorption of their biochemical products to be the essential factor. This is also Gerster's opinion.

The process is essentially a chronic one and, while interference is often necessary in acute crises, as in appendicitis and obstruction, yet these are merely the last phase of a chronic condition. These membraniform adhesions are found near any focus of acute, but especially chronic, infection. Witness the adhesions in pelvic disease, or in upper abdomen infection.

There are 2 kinds of adhesions: (1) those intimate adhesions without the interposition of a membrane or band, as between two coils of gut where the visceral peritoneum is destroyed; (2) those connections between organs by bands or membranes, such as Jackson's veil, etc., when the peritoneum is not destroyed. These are slow and insidious in forming

and do not provoke striking symptoms, which only appear when the lumen of the gut is affected.

These adhesions usually appear first at the site of normal suspensory bands as translucent, definite, loosely adherent membranes, which spread from this place upward or downward. The fundamental causes of these membranes lie in disorders of the mucosa of the gut or the intestinal contents. Gerster deems this the most important etiological factor in the question.

The author's patient, a white female, aged 38, suffered from an extensive progressive ulcerative enteritis of the large bowel. There was a continuous rectal discharge of blood, mucus, and pus; there was also frequent constipation. The chest was normal and there was nothing abnormal palpable in the abdomen. The proctoscope showed a large field of deep ulceration with marked contraction of the rectal area.

Colostomy was performed on the left side with much relief for a time. One month later colicky pain, fever, and pus from the intestine appeared and persisted spasmodically for several weeks. Several abscesses were found near the colostomy opening and were drained. Colicky pains persisted, with visible peristalsis of the small intestine. Death occurred shortly afterward from cerebral embolism.

At autopsy the small intestines were found to be bound together in the abdomen with veil-like adhesions which in places obstructed the lumen by constriction. There was no ulceration of mucosa, however. The same kinds of adhesions were found around the large bowel and appendix, with the cæcum buried in dense adhesions. From the beginning of the sigmoid on, deep ulcerations in the mucosa were found and the rectum was densely adherent in the pelvis with thickened walls and numerous old scars of healed ulcers which constricted its lumen. Gerster advocates the use of the name "perienteritis membranosa" for this condition.

PHILLIPS M. CHASE.

GASTRO-INTESTINAL TRACT

Rehfuß, M. E.: Analysis of Achylia Gastrica. *Am. J. M. Sc.*, 1915, cl, 72.

Six cases are reported by the author. He reaches the following conclusions:

1. True achylia in which there is a total lack of acid and enzymes throughout the entire period of gastric digestion is exceedingly rare.

2. By means of the fractional method he has been able to study the entire period of gastric digestion in cases of achylia. On the basis of Pawlow's work, it is suggested that if his conception of gastric secretion be correct, it should follow that achylia can be either psychical or chemical. A total absence of secretion in the first hour of digestion, followed by a perceptible secretion in the second, would favor the belief that a psychical achylia (nervous) exists. The reverse, falling off in secretion, would favor the interpretation of a chemical

achylia. A total lack of secretion through both phases might indicate a deficiency of both functions or an inactive mucosa.

3. The author's studies show that the commonest form is a complete lack of gastric secretion through both phases (total achylia); two cases were encountered of true psychical achylia, but a pure chemical achylia was never encountered.

4. Attention is called to spurious achylia, which is quite common, and in which there is an ultimate elaboration of juice late in digestion, and enzymes always present.

5. By means of the administration of parathyroid extract in two cases of bona fide achylia, one of over ten years' duration, a perceptible return of the gastric secretion was noted during the psychical phase. Dietetic and local treatment were instituted at the same time.

6. The phase method of examination is of great value in determining the type of achylia as well as holding the possibility that at some phase the secretion might still be active, as shown in several of the cases recorded. This finding distinctly improves the prognosis.

EDWARD L. CORNELL.

Porter, M. F.: Leather-Bottle Stomach. *Ann. Surg., Phila.*, 1915, lxii, 33.

Following a brief résumé of the literature, Porter reports a case of leather-bottle stomach and draws certain conclusions.

This condition is known as linitis plastica, cirrhosis of the stomach, chronic interstitial gastritis, and sclerosis of the stomach. There is a diffuse thickening or hardening of a greater or lesser part of the stomach whose capacity may be increased or diminished. Brinton declares this to be benign in character, while Rokitsansky declares it to be a fibroid cancer.

A brief résumé of the literature on the subject follows. The opinion prevails that the condition may be both benign and malignant. That similar changes occur in both large and small bowel is proved by several reported cases.

The disease is more common in men and is essentially of adult life. Also, the age incidence is the same in malignant cases as in the benign. Ulceration is rare but peritonitis common. Viellers reports tuberculosis as a frequent complication.

There are no distinctive symptoms and the diagnosis has been made before operation only three times (Boulton, Deguy, and Osler). Given a case of suspected fibrosis of the stomach, a general arteriosclerosis with cardiac trouble would add to the certainty. Unless relieved by surgery the condition is fatal.

The case reported was that of a white male, aged 46, married, and with negative family, past, and venereal histories. Habits good.

Five weeks previous, pain had begun in the lower left side, later localized under the navel, and of a gnawing, grinding character. All food soured and there was considerable gas. He had dyspnea when

in pain and on exertion. He had no headache, nocturia, or loss of weight.

Examination showed the heart normal, a large, tender epigastric tumor extending to the umbilicus, and 3 inches to the left. The upper border extended under the left costal margin at the middle. The urine was normal. Gastric contents had the appearance of coffee-grounds, with mucous, blood, and 4 per cent HCl; Oppler-Boas bacilli and sarcinae present. The blood showed slight anemia.

Operation showed that almost the entire stomach was involved, but there was no glandular enlargement. The pyloric end of the stomach was adherent to the liver. A subtotal gastrectomy was done, and a loop of jejunum anastomosed to the remains of the stomach with a Murphy button. An uninterrupted recovery followed and the button was excreted on the sixteenth day. Considerable relief at the time was experienced but death followed six months later.

Autopsy showed that the walls of the stomach were universally thickened and firm, with several pyloric ulcers. Sections showed masses of carcinomatous cells.

PHILLIPS M. CHASE.

Carman, R. D., and Balfour, D. C.: Gastrojejunal Ulcers; Their Röntgenologic and Surgical Aspects. *J. Am. M. Ass.*, 1915, lxxv, 227.

The authors refer to the condition occasionally observed, in which secondary ulcers develop in the vicinity of a gastro-enterostomy. These secondary ulcers have been variously described as jejunal and gastrojejunal ulcers.

As diagnosis of the conditions is usually difficult, owing to the absence of pathognomonic symptoms, the authors think that the röntgen ray might reasonably be expected to assist in the diagnosis.

The röntgen findings in certain of the authors' cases are given in detail and analyzed in comparison with the findings in the normal gastro-enterostomized stomach. Of the 11 patients examined 10 showed abnormalities not customarily seen in the gastro-enterostomized stomach. The signs usually observed were: retention from the 6-hour meal, large size of the stomach, exaggerated peristalsis, and spasticity. Deformity of contour about the stoma, deficient patency of the stoma, local irregularity of the jejunal contour, and dilatation of the duodenum were also commonly met with.

The authors think that in all cases of gastrojejunal ulcer there are definite röntgenologic signs of an abnormal condition, and that in many instances there are more or less direct signs pointing to the location of the trouble. The most direct index of gastrojejunal ulcer noted in the author's series of cases was marked deformity about the stoma. A correlation of the röntgen findings with the clinical data should aid in deciding whether a gastrojejunal ulcer is present or not.

H. E. POTTER.

Smithies, F.: The Etiologic Relationship Existing Between Gastric Ulcer and Gastric Cancer. *Interst. M. J.*, 1915, xxii, 672.

Certain phases suggested by the study of 921 cases of gastric cancer and 500 cases of benign peptic ulcer as demonstrated by pathological study of specimens obtained in the operating room, led Smithies to arrive at the following conclusions:

1. There are no experimental, clinical, or pathological data that absolutely demonstrate the mechanism of the malignant transition of benign gastric ulcer. In fact upon pathological grounds no instance of such transformation can be demonstrated.

2. Clinically, the histories of instances of gastric cancer strongly suggest that such neoplasms arise most frequently from chronic calloused gastric ulcer, clinically benign.

3. Since it appears to be impossible clinically to segregate that group of chronic gastric ulcers which are destined to undergo malignant transformation from those that will remain benign, free excision of all chronic gastric ulcers should be performed whenever mechanically possible.

T. O. BOYD.

Blumer, G.: The Medical Treatment of Peptic Ulcer. *Nashville J. M. & S.*, 1915, cix, 249.

Blumer presents a comparison of the methods of Leube, Albu, Einhorn, Lenhartz, Hort, Straus, and Jarotsky, with particular reference to a modified Lenhartz treatment as applied to 27 cases in the New Haven Hospital. He classifies peptic ulcer patients into two groups: (1) surgical — pyloric obstruction, intractable hæmorrhage, subphrenic abscess, perigastric adhesions, and (2) those which should have carefully supervised medical treatment — hæmorrhage of the fulminating type, acute ulcer, uncomplicated chronic ulcer.

Features common to all the procedures are: absolute rest, accessory medication, diet, external application of heat or cold to the epigastrium, and care of the bowels. Contrasts in treatment, mainly in diet, are classed in three groups: (1) more or less attention to mouth feeding (Leube); (2) immediate feeding with albuminous foods (Lenhartz); (3) feeding of fats (Straus and Jarotsky).

The underlying principle of Leube's method is to encourage healing by affording the stomach the most complete rest possible. Lenhartz lays stress on hyperacidity as preventing healing, and he seeks to neutralize the free acids by acid-binding foods, such as albumins, raw meats, etc. Also, he maintains that general nutrition favors healing. Jarotsky and Straus seek to inhibit gastric secretions by the use of fats and eggs. All methods have their advocates and opponents. Objections to the Leube method are: prolonged and tedious routine, hunger peristalsis hindering the desired rest, nutrient enemata of little avail and exciting gastric movement, gastric juices secreted on empty stomach, vomiting, under-nutrition. However, Leube claims

a mortality of only 2.5 per cent in bleeding ulcers and 90 per cent recoveries in all cases.

Objections to the Lenhartz treatment are as numerous, but he answers his critics with as good a report as Leube.

The author favors the Lenhartz course, finds it agreeable to patients, especially if cooked minced chicken is substituted for the raw meats; the pain disappears in a few days; narcotics are not needed; and the patients gain in weight after the first week. Gastric ulcers do not do so well under the treatment as duodenal.

M. W. PICKARD.

Woolsey, G.: Carcinoma of the Stomach. *Ann. Surg.*, Phila., 1915, lxii, 22.

The subject of gastric cancer is briefly reviewed by Woolsey who reports statistics of 36 operative cases. Early diagnosis is the keynote.

In any series of cases there are 2 groups: (1) Those appearing to be cancer from the outset, and (2) those with a more or less long gastric history resembling a typical or an irregular ulcer history. In the 36 cases, 30 were pyloric, and of these 19 gave a primary cancer history and 11 an ulcer history.

While the average age was 53, one case was 32.

Pain is not severe, but more commonly a dull ache increased by food and relieved by vomiting. In the 30 cases, pain was absent in only 4.

Vomiting and eructations occur in nearly all cases, but are not of much diagnostic value, for they occur in all gastric ailments.

Anorexia is more pathognomonic and helps in distinguishing cancer from ulcer. It was present in 27 out of the 30 cases.

Loss of flesh and strength is another most suggestive symptom. It has apparently no connection with the anorexia or vomiting.

Anæmia is a rather constant symptom. Only 1 case of the series showed a normal hæmoglobin. The average was 53.9 per cent. The skin is dry and the facies have a pinched, wrinkled look with a hopeless, dejected expression.

A definite mass was palpable in 20 cases of the series and in 5 others was of an indefinite character.

As to stomach tests, impaired motility is shown by the presence of raisins in the lavage water several hours after ingestion. In the gastric contents analysis, the absence of free HCl is the rule. Excess of lactic acid is found under this condition but is not present early.

Smithies found the Oppler-Boas bacilli in 93.8 per cent by differential agar stain, and Friedenwald, occult blood in 92.5 per cent of cases. The glycyloxytryptophan test has not proved its claims. The Wassermann reaction should be used in every case.

The X-ray is one of the best diagnostic means. Carman claims diagnostic signs were shown in 93 per cent of cases at the Mayo Clinic.

Gluzinski's test for differentiating between ulcer and cancer in the presence of some free HCl is of great value. In 215 cases of cancer Smithies found it positive in 74.8 per cent. None of the tests give

uniform results and should only be used in conjunction with the clinical data.

"Watchful waiting" is highly condemned by the author who advises in all suspicious cases after short medical treatment, an exploratory operation based on the diagnosis of "some surgical condition in the abdomen." The risk of exploration is less than the risk of delay.

There is no effective medical treatment. Resection offers the only cure. In the Mayo Clinic, of the 80 per cent who recovered from operation, 38 per cent were still free from recurrence 3 years later and 25 per cent remain cured 5 years later.

Upon opening the abdomen the presence of metastases and whether the growth can be removed are the first questions to be decided. The latter depends on the extent of stomach involved and the amount of adhesions. Inflammatory adhesions do not contra-indicate operation.

Woolsey believes in resection even if the lymph-nodes are enlarged, because (1) all such nodes are not carcinomatous and (2) this method affords more relief than gastro-enterostomy.

In spite of a low hæmoglobin per cent resection may be done, as little blood should be lost. However, transfusion of blood should be used whenever necessary, either before or after operation.

The Billroth II method of resection is considered the best procedure. The author also recommends severing the stomach with the cautery for hæmorrhage and prevention of cancer-cell dissemination.

Von Eiselsberg's unilateral exclusion in cases where resection is inadvisable, is highly recommended. Gastro-enterostomy, however, gives very disappointing results.

No radical operation is applicable to cancer in the cardiac end, but Woolsey recommends the trial of gastrectomy by the Senn or Kader method.

The chief contra-indications to further operation after exploration are: (1) free peritoneal fluid, (2) infiltrated umbilicus, (3) extensive metastases especially in the liver, (4) large mass, and (5) extensive adhesions.

The author's conclusions are: (1) An early diagnosis is the great desideratum. (2) Resection gives good results, low mortality, a fair number of cures, and considerable prolongation of life and comfort when ultimate cure does not result. (3) The use of the two-stage method or blood transfusion is advisable in certain cases. (4) Gastro-enterostomy is disappointing in results and mortality, but unilateral exclusion offers an improvement in results. (5) Simple exploration should be used more frequently, but should be restricted as much as possible.

PHILLIPS M. CHASE.

Smithies, F.: The Early Diagnosis of Cancer of the Stomach: a Study of 921 Operatively and Pathologically Demonstrated Cases. *Am. J. Surg.*, 1915, xxix, 255.

Smithies presents detailed facts from the clinical study of 921 demonstrated cases of gastric carcinoma.

1. From clinical histories:

a. Etiologic:

(1) Sex. There were 693 males and 228 females, or a ratio of 3:1.

(2) Age. Between the ages of 40 and 69 occurred 84.9 per cent of the cases. There were 19 cases below the age of 31.

(3) Occupation. Nearly one-third were from farms and rural communities.

b. Clinical history:

(1) Gastric cancer in those operated on for gastric ulcer and in whom the cancer was diagnosed microscopically post-operative in 72 cases, or 7.8 per cent. A case is added illustrating this point.

(2) Gastric cancer, developing in those with long-term previous peptic ulcer history and in whom cancer subsequently appeared, occurred in 436 cases, or 47.3 per cent. An illustrative case follows.

(3) Gastric cancer in those with perfect gastric health prior to cancer, that is, the common "textbook" type, occurred in 294 cases, or 31.9 per cent. An illustrative case follows.

(4) Gastric cancer in persons with previous gastric symptoms but of no clinical type occurred in 84 cases, or 9.12 per cent. An illustrative case follows.

(5) Gastric cancer in those presenting few clinical gastric symptoms, occurred in 19 cases, or 2.1 per cent. Exploratory laparotomy was necessary for diagnosis. An illustrative case follows.

(6) Of secondary gastric cancer there were 16 cases, or 1.7 per cent. The most common were from breast, uterine, gall-bladder, or pancreatic cancer. An illustrative case follows.

c. Hæmorrhage:

(1) Macroscopic. Present in 170 cases, or 18.5 per cent. In 17.4 per cent of these the bleeding occurred at least two years previous. These all gave an ulcer history.

(2) Tests for blood. In gastric contents 78 per cent were positive by the guaiac or benzidin method. In 380 stools, 82 per cent were positive. Given an ulcer history with persistent blood demonstrated in the stools, malignancy is probable.

d. Vomiting. This is generally due to a persistent mechanical fault in the emptying power of the stomach, or as a result of the stenosis of chronic peptic ulcer. This occurs in 3 out of 4 cases. In late cancer, vomiting was present in nearly 80 per cent.

2. From physical examination:

a. Tumor. Absent in 312 cases, or 33.7 per cent. This series gave the highest percentage of cures. Tumor was present in 609 cases, or 66.2 per cent.

(1) Location of tumor. In the epigastrium in 85.7 per cent. In the region of the navel in 13 per cent, and below this in 1.4 per cent.

(2) Relation of tumor to part of stomach. In 66.7 per cent the pylorus was involved. Eight out of ten of these were palpable. In 12 per cent the greater curvature was affected. Nine out of

ten were palpable. None of the tumors of the fundus could be palpated.

(3) Size of tumor. The size varies greatly from a narrow, ridgelike, or nodular, mass to the size of a child's head. Rarely, however, does it extend below the navel.

(4) Tenderness. Most marked, and most commonly situated in the epigastrium between the right nipple and the left parasternal lines, in ulcera carcinomatosa. In well-advanced cases this is not marked unless perforation or extensive ulceration has taken place.

(5) Loss of weight. Usually slight to begin with but loss is ultimately consistent and with accelerated rate. In the early cases the average was about 17 pounds; in the latter cases about 26 pounds.

(6) Cachexia. This is a late manifestation and the case is usually hopeless.

3. From laboratory methods:

a. Test meal analysis. Gastric emptying power interfered with in nearly 71 per cent of cases.

(1) Gastric acidity. This is of greater prognostic than diagnostic value. Free HCl was absent in but 52.4 per cent of the series. Nearly 1 out of 5 had free HCl between the ages of 20 and 50. In inoperable ulcerated cases the average free HCl was 2.4. In inoperable, non-ulcerated cases it was 6.4. In operable cases it was 31. However, if the free HCl decreases and the combined HCl increases, malignancy is to be suspected.

(2) Lactic acid. This was present in 52 per cent of the series. Nine out of ten of these cases were inoperable.

b. Significance of special ferments.

(1) Formol index. The average in 87 cases of gastric cancer was 22.3; in 99 cases of duodenal ulcer, 12.4; in 57 cases of benign gastric ulcer, 11.6; in 32 cases of benign achylia, 14.1; in 16 cases of pernicious anæmia, 14.5; and in 5 cases of liver cancer, 4.25.

(2) Edestin test (Fuld-Levison). There were in all 108 cases studied. In early gastric cancer with low HCl there is high peptolysis and low proteolysis.

(3) Glycyltryptophan test. Positive in 40 per cent of 186 cases. It is not of much value diagnostically.

(4) Wolff-Junghan's test. Positive in 80.1 per cent of 230 cases. Is considered of considerable diagnostic value.

c. Microscopic examination.

In early gastric cancer there is no characteristic picture, but in well-established cancer with colored agar method, Oppler-Boas organisms were found in 94.1 per cent of 172 cases. In 90 per cent of these, free HCl was below 10, and in 8 out of 10 of these cases palliative operations alone were possible. In only 1 per cent were epithelial cells showing atypical mitoses found.

d. Serologic analysis. This is not of much value at the present time.

4. From röntgen examination:

Deformity shown in outline, alterations in peristalsis, variations and abnormal position shown in 90 per cent of cases previously diagnosed as well-established cancer. In 10 per cent of suspicious cases, the diagnosis was proved.

Early cases rarely exhibit a characteristic picture, but the röntgen demonstration of a chronic, callous ulcer in the pyloric half of the stomach should lead to an abdominal exploration, as 3 out of 4 of these are microscopically malignant. PHILLIPS M. CHASE.

Halpern, J.: An Aminolytic Ferment in the Stomach in Carcinoma (Über ein aminolytisches Ferment im Mageninhalt bei Carcinom). *Mitt. a. d. Grenzgeb. d. Med. u. Chir.*, 1915, xxviii, 709.

Halpern reviews the literature with reference to the chemical examination of the stomach contents in carcinoma of the stomach and finds that the methods hitherto in vogue are of no practical importance in diagnosis, as they merely show that the chemistry of the stomach contents in gastric cancer varies from the normal in various ways. But Halpern has found that in such cases there is an amidase in the stomach contents that splits the amino group out of amino acids, with the formation of formic acid.

While engaged in studying the influence of formic acid in the production of diabetes, Halpern had occasion to examine the stomach contents for it in a number of cases. He describes his technique for demonstrating it. This characteristic amidase has been found in 12 out of 13 cases of gastric cancer and in no cases of benign stomach disease. He believes that it is a product of cancer-cells. It will take further research to show whether it is an early sign of gastric cancer that can be depended on or whether it is found in other conditions.

A. Goss.

Deaver, J. B.: What Does Surgery Offer the Patient with Carcinoma of the Stomach? *N. Y. M. J.*, 1915, cii, 8.

What surgery can offer depends upon an early diagnosis and immediate and radical operation with removal of the lesion, be it already carcinoma or gastric ulcer, which is a forerunner of carcinoma. The possibility of surgical cure from operation depends on when the operation is done, the site of the lesion, the type of malignancy, and the extent of the operative procedure.

These cases must be diagnosed early, as there are no pathognomonic signs of cancer of the stomach in the operative stage, and to know one's limitations in this respect and insist on surgical exploration is essential.

By exploration the author does not necessarily mean opening the abdomen alone, but the stomach as well, if a diagnosis cannot be made by inspecting and palpating the stomach wall. This is his routine practice and he has no reason to regret having adopted it.

Absence of free hydrochloric acid, heralded as a

constant sign, has not been seen in his experience. It is more likely to occur late in the disease and is often found in carcinomatous disease in other organs of the body, and is, therefore, of no great diagnostic value.

The X-ray in the hands of an expert with extensive experience in these cases is of great value in making early diagnosis, but in the presence of negative X-ray findings the surgeon should not be deterred from opening the abdomen, dispelling mystery, and revealing the truth.

His advice is to operate in all cancers of the stomach, operate early, and, if unable to make a diagnosis, operate to make it.

EDWARD L. CORNELL.

Sear, H. R.: The Röntgen Ray Diagnosis of Surgical Diseases of the Stomach and Duodenum.
Med. J. Austral., 1915, i, 527.

Sear treats of the value of the X-ray in the differential diagnosis of chronic disease of the stomach and duodenum. He states that, though the X-ray examination will usually show the presence of malignant disease, errors are common in locating trouble in the prepyloric region when it is in reality in the first part of the duodenum.

The author holds the screen method as essential to diagnosis, and that serial radiography will not replace this method. Examinations are usually made in the vertical position, though the horizontal and lateral positions are also used.

The routine systematic procedure employed in the röntgen examination of the stomach is described, for the recording and observance of information as to shape, motility, mobility, etc.; also the findings which are typical of pathological conditions. He shows that very often, particularly in the case of gastric ulcers in various phases of evolution, the röntgen findings must be verified by clinical data before a diagnosis can be made.

The author reiterates that the test bismuth meal is as yet far from absolute in diagnosis; that lesions of the mesogastric region escape detection far less readily than those at the inlet and outlet of the stomach; and that it is around the outlet that the majority of röntgen errors in diagnosis occur.

H. E. POTTER.

Lapenta, V. A.: Gastropyloroduodenostomy, with Excision of the Ulcer-bearing Areas for Acute Perforated Ulcer in the Pyloric Canal. *J. Am. M. Ass.*, 1915, lxx, 163.

This case report is of interest, principally on account of the correct diagnosis made before operation from the clinical picture presented by the patient.

The patient, aged 26 years, while standing on the sidewalk in front of his residence, talking to friends, was seized with an acute excruciating pain in the upper abdomen. So intense was the pain that it caused him to fall to the ground unconscious. He was carried into the house, and it was noticed that he vomited a small quantity of blood.

About one hour after this happening, he was seen and found pulseless at the wrist, cold clammy sweat covering his body, respiration entirely thoracic, and his face had a very pinched and blanched expression. He was found sitting in bed with the body acutely flexed on the knees. No information or clinical history could be obtained from him. All the facts on which to evolve a working diagnosis had to be obtained from bystanders who had witnessed the attack and knew nothing about the patient.

The diagnosis of perforated gastric ulcer was made. Perforation of the gall-bladder was ruled out on the statement of relatives that the man had always been well and had never had an attack of acute abdominal pain before.

The patient was removed to the hospital and an immediate operation was performed.

A long paramedian incision was made on the right epigastric region, extending down to the right iliac fossa. On opening the peritoneum a large amount of blood and gastric contents escaped. From the amount of food and liquid in the abdomen, it was very evident that the patient had had an excellent dinner and had certainly not lacked for wine. A careful surgical toilet was made and the examination of the viscera was begun at the stomach. Exactly in the pyloric ring and in the lower portion of it a large perforation, large enough to admit the index finger, was found. This was certainly a fortunate location for the perforation, as it enabled the author to make a wide excision of the ulcer-bearing area, and it was possible to restore the pyloric end of the stomach, insuring a large pylorus by employing the technique of Vidal, affecting a gastropyloroduodenostomy. The appendix was found to be acutely inflamed, with a clean cut perforation, with a little fecalith extruding from it.

The appendix was removed in the usual manner. The abdomen was properly closed, adequate drainage being provided at the lower angle of the incision. The recovery was uneventful, the patient leaving the hospital after three weeks.

This case seems to strongly emphasize the etiological rôle played by an appendiceal lesion in the production of acute gastric and duodenal ulcers. Lapenta is inclined to attribute to the concomitant acute appendicitis more importance than that of mere coincidence.

Dieulafoy and d'Antona have held for many years that an appendiceal lesion can be the primary focus which may set up metastatically an ulcerative process in the stomach and duodenum.

This view is also held by Lapenta and is substantiated from his case records of a large number of acute and chronic gastric and duodenal ulcers. Chronic, acute and subacute, appendiceal lesions have been found to be present with remarkable frequency in most cases of acute gastric and duodenal ulcers.

The author attaches great significance to the relative rarity of these appendiceal lesions in the ulcers of the chronic type, both of the stomach and

duodenum. The suggestion made of the probable etiological rôle played by appendiceal lesions in the production of acute gastric and duodenal ulcers is well supported by abundant clinical experience. This would seem to emphasize the necessity of prompt surgical treatment in appendiceal lesions, in order to prevent the probable development of gastric and duodenal ulcers.

C. E. Cox.

Black, K.: Two Cases of Phlegmonous Duodenitis.
Practitioner, Lond., 1915, xcv, 104.

The author reports two cases of phlegmonous duodenitis, and abstracts two cases found in the literature by the author.

The first case, a married woman, aged 33 years, had led a healthy life with occasional attacks of biliousness. One and a half hours after eating mutton she was seized with acute abdominal pain. Pain continued, she became feverish, and vomiting became constant after a drink. Her bowels were opened. The next morning pain referred to the umbilical and the right iliac regions was worse and vomiting became biliary in character. Pulse 140. Temperature 104.2° F. There was no jaundice, tongue was clean but dry. The abdomen was slightly distended, particularly the upper part, and peristalsis was visible. There was no rigidity, but tenderness in the upper abdomen. The stomach was dilated; the spleen and liver were enlarged; the heart, lungs, urine, rectum, and vagina were normal. At operation, recent plastic peritonitis was found around the duodenum and posterior to the stomach. There was no perforation. The patient was almost moribund and the local area of peritonitis was drained. Death followed shortly afterward.

At autopsy the stomach was found dilated. Follicular gastritis. The first 2.5 inches of duodenum were normal. Beyond that for about 8 inches the walls of the duodenum were markedly thickened and inflamed. On section the walls were studded with numerous small abscesses. No ulceration or signs of old disease were found in the mucous membrane, which was injected. The bile and pancreatic ducts and pancreas were normal; liver and spleen enlarged and soft. Cultures grown from the liver, spleen, and the wall of the duodenum proved the presence of streptococci.

The second case, a farmer aged 55, had been troubled for six years with recurring attacks of abdominal pain and vomiting of 24 to 48 hours' duration. The last attack occurred six months before he was seen by the author.

He had a bad attack of abdominal pain. Shortly after vomiting he had a rigor. The pulse was 100 and temperature 101° F. Two days later he had a similar attack followed by rigor.

At operation the duodenum and first 8 inches of the jejunum were swollen, inflamed, dark red, and in places black in color. At the pylorus the line of inflammation was sharply defined, but ended gradually in the jejunum. The duodenum ap-

peared solid and obstructed. A posterior gastro-enterostomy was performed; a drain was inserted and the wound partly closed. The patient rallied, then became worse and died three hours after operation. No autopsy.

From these and two other similar cases the author concludes that a substance has entered the blood and been excreted by the bile and on entering the duodenum has combined with, or been split up by, certain of the duodenal contents, and an intense irritant poison has been formed which has attacked the walls of the duodenum, setting up a violent inflammation.

O. R. SEVIN.

Lambert, L.: Duodenal Ulcer from a Surgical Standpoint. *Med. J. Austral., 1915, ii, 8.*

Surgical interference in duodenal ulcer must be considered when medication and diet have failed to relieve symptoms or when these symptoms have recurred after temporary relief. It is imperative when an ulcer has perforated, when it is endangering life by repeated hæmorrhages or is endangering nutrition by cicatricial obstruction.

Toxæmias have long been known to be associated with duodenal or gastric ulceration, particularly burns, but also in other toxæmias, such as sepsis, cholæmia, etc. The reason that the ulcerations are confined to these regions is in all probability the acid character of the gastric juice, as proved by the experiments of Bolton. The occurrence of jejunal ulceration after gastro-enterostomy and not after intestinal anastomosis, points to the acidity as the important factor in the persistence of the ulceration. The author believes that an excessive quantity of toxins absorbed from foci in the bowel, will be excreted in the bile and, effecting a continuous damage to the duodenal wall, possibly cause lesions analogous to aphthous ulcers of the mouth, which are continued by the combination of infection and acidity.

Wilkie found that the duodenal wall in many instances was supplied by what is virtually an end artery, and it can readily be understood that this relative limitation of the blood supply would interfere with the healing of any lesion in this region.

Induration of these ulcers in the majority of cases prevents excision, but even if excised, such treatment does not eliminate hyperacidity and so a gastrojejunostomy must supplement the excision. If the latter is efficient practically no food leaves the stomach and so pyloric exclusion is unnecessary. In the ordinary case, and especially when undertaken for hæmorrhage the procedure appealing to the author is autolytic excision by means of the pentagonal compression stitch of Draper and Carpenter, combined with a posterior gastrojejunostomy.

The most striking complication of duodenal ulcer is acute perforation, of which 14 cases are reported. Analysis of these cases shows that the most characteristic feature is the onset of sudden, overwhelming pain in the upper abdomen. Vomiting is not

marked. The temperature and pulse are low at first but later the pulse tends to rise. The respiratory movements are restrained and the patient looks ill. Rigidity is the most important factor in diagnosis; from the first it is present all over the abdomen, but early more marked on the right than on the left side. The presence of movable dullness and loss of liver dullness are relatively unimportant.

Perforation must be differentiated from (1) acute pancreatitis, in which there is often cyanosis, and in which vomiting is more persistent and abdominal rigidity more marked; (2) appendicitis, in which rigidity is more marked in the right iliac fossa; (3) strangulation of the bowel, which is characterized by persistent vomiting, paroxysmal pain, distention, and absence of rigidity; and (4) ruptured ectopic pregnancy, in which rigidity is absent and in which hæmorrhage soon clears up the diagnosis.

The treatment is immediate laparotomy, the operation never being delayed in the hope that the patient will rally from the shock. This should be combatted by the immediate administration of a full dose of morphine. In only one of the 14 cases was the ulcer suitable for excision. In the others a deep compression stitch was placed and a posterior gastrojejunostomy by the no-loop method was done, the anastomosis being placed as near the pylorus and greater curvature as possible. The abdominal wound was closed without drainage and no secondary abscesses developed.

E. K. ARMSTRONG.

Kirkwood, W. L.: Torsion of the Small Intestine; Resection of Eight Feet of Intestine; Recurrence of Torsion. *Med. J. Austral.*, 1915, ii, 49.

The patient, aged 60, had suffered from pain of varying intensity for eighteen hours, during which time she had vomited three times, the pulse had ranged from 70 to 92 and the temperature had not been above 99.6°. The pain was felt chiefly in the upper abdomen and left side, there was no local and very little general tenderness, the abdomen had become distended and there was dullness in the flanks. After much delay, the abdomen was opened 23 hours after the first symptom was noted. By this time the abdomen was enormously distended with fluid, the pulse was imperceptible, and the temperature 97°.

Investigation revealed the fact that the mesentery had undergone torsion and was discolored, swollen, and pulseless. Many feet of bowel were distended, cedematous, without gloss, and chocolate colored. The diseased area was excised, eight feet in all. After a slow convalescence the patient regarded herself as well.

Nine months later there was a recurrence of the previous symptoms with operation within four hours, at which time there was again found a clockwise torsion of the small intestine with bands of adhesions between the various lines of suture, and a marked stenosis at the line of intestinal suture.

The torsion was unwound and the circulation being good and the stenosis not being deemed responsible for the trouble, nothing further was done. An uninterrupted recovery followed. The patient is much better than after the first operation and has gained flesh rapidly.

The author regards the following points as of interest: (1) the occurrence of torsion without obvious cause, such as adhesions or malformations; (2) the recurrence of the torsion; (3) the length of intestine removed; (4) the lenteric diarrhœa which followed the first operation and which later ceased.

E. K. ARMSTRONG.

Callender, G. R.: Gastric Glands in Meckel's Diverticulum. *Am. J. M. Sc.*, 1915, cl, 69.

The author reports the results of an autopsy on a child aged nineteen months, who died as a result of intestinal hæmorrhage. There was a history of one previous attack from which it recovered, but it had always been rather weak and ill-nourished.

About 75 cm. from the cæcum on the border of the ileum opposite its mesenteric attachment was a diverticulum, 2 cm. in length and 2.5 cm. in diameter, attached to the posterior wall of the cæcum at its apex by a fibrous band 0.4 cm. in width. On section there appeared a punched-out, regular ulcer, 0.5 cm. in diameter, in the ileum at the border of the diverticulum. In the margin of this ulcer was a small vessel, the lumen of which was plugged with pinkish clot.

The walls of the diverticulum were from 0.4 to 0.6 cm. in thickness, and the mucosa resembled that of the fundus of the stomach. The diagnosis was peptic ulcer of the ileum; Meckel's diverticulum, lined with mucosa of the type of the gastric fundus glands.

EDWARD L. CORNELL.

Jessup, D. S.: Carcinoma of the Appendix, a Plea for Its Removal Whenever the Abdomen Is Opened. *Am. Med.*, 1915, xxi, 560.

The practice of routine microscopical examination of appendices has shown that carcinoma of this organ is not uncommon. One group of 5,000 cases demonstrated that the disease occurs once in every 225 cases of chronic appendicitis. The author's records of three hospitals show that carcinoma occurred four times in about 2,100 appendices. Only one of the specimens presented a gross appearance suggesting tumor formation. The clinical course of carcinoma in this region points to a slow growing and not very malignant type of tumor with extension outside the appendix uncommon. In about half of the cases the age incidence is under 30.

In the case reported the patient, a woman, had had five attacks of appendicitis. The organ presented the appearance of a chronic obliterating appendicitis, except that the color was yellow after formalin hardening, instead of the usual white. Sections through the distal portion showed absence of lumen, loss of the mucosal structure with a dense

growth of connective tissue in which lay well-defined nests and strands of moderate sized cells which had invaded the muscularis outward to the serosa. It was the picture of a medullary or scirrhous cancer rather than of the adenocarcinoma so often seen in tumors of the large gut.

The question arises whether chronic inflammatory changes here may not be the precursor of carcinoma. If one remembers that in from 2 to 4 out of every 1,000 appendices there will be carcinomatous changes, and this without reference to the age of the patient, the appearance of the organ, or history of the trouble, there seems to be very good reason for urging the removal of this organ whenever there is opportunity.

E. K. ARMSTRONG.

Clopton, M. B.: Appendicitis in Children. *Pediatrics*, 1915, xxvii, 271.

In the cases of appendicitis in children treated within the past eighteen months at the St. Louis Children's Hospital, 9 per cent of the cases occurred in the first 5 years of life, 54 per cent between 5 and 10 years, and 37 per cent between 10 and 15.

The important feature of the pathology of appendicitis in children is the early development of gangrene. In the author's cases, a third were gangrenous throughout or in part and perforation accounted for the peritonitis in another large group. Only one-third of the cases were uncomplicated acute inflammations where the inflammation was confined to the appendix and permitted a closure of the wound without drainage. One-half of the cases had a more or less localized collection of pus outside the appendix and one-eighth of the cases showed a spreading peritonitis. The appendix was retrocaecal in 30 per cent, and many of them were gangrenous. Several times a half twist of the meso-appendix was found, which probably was a factor in the stasis that resulted in gangrene. Twice there was definite history of trauma. Faecal concretions were found in a fifth of the cases. Pinworms were found in three cases.

The comparison of the results of operations for appendicitis in adults and children show more favorable figures for the children. The author has had a mortality of less than 4 per cent.

All cases of appendicitis in children should be operated upon as soon as the diagnosis is made. In the beginning of the attack the infected organ may be removed intact with its dangerous contents safely enclosed. Under such circumstances the mortality is a negligible quantity and is dependent upon accidents over which the surgeon has little control.

The dangerous stage of appendicitis, occurring between the third and the sixth day with the infection not circumscribed, but involving the neighboring organs in the acute inflammatory process or the early pathologic changes of a circumscribed or general peritonitis, is the period in which the question of operation has divided the surgical world into two camps.

EDWARD L. CORNELL.

Patry, G.: Appendicostomy (L'appendicostomie). *Cor.-Bl. f. Schweiz. Aerzte*, 1915, xlv, 897.

Appendicostomy is a simple operation, consisting in bringing the appendix out, suturing it to the parietal peritoneum or even the skin, decapitating it and introducing a catheter for the purpose of flushing out the intestine. It was introduced in 1895 by Keetley, but his praise of it was so exaggerated that it prejudiced continental surgeons against it, and its use has been confined to England and America. Patry thinks it a very valuable operation when properly used. It is indicated in colitis, intestinal stasis, intestinal occlusion and peritonitis.

He describes the case of a girl of 19 who had taken bichloride of mercury, and was suffering from an intense bloody diarrhoea. He relieved the pain and improved her general condition by performing appendicostomy and flushing out the intestine.

Another case was in a man of 60 who had 20 to 30 bloody stools per day. He had been given various treatments for ulcerative colitis without success. Patry performed a laparotomy and examined the whole large intestine for a tumor, but found none. Appendicostomy was performed and the man was taught to flush out his own colon with physiological salt solution; it was introduced under sufficient pressure so that it came out at the anus immediately. His condition improved rapidly; he gained in weight, the ulcers disappeared, and his bowel movements became regular. The fistula was finally closed and he has been well ever since—more than a year.

In one case in which the appendix had been removed previously the author practiced Gibson's cæcostomy, that is, the suturing of the ileocaecal valve to the skin, but he could not see that the results were any better than after simple appendicostomy.

The operations usually proposed for chronic intestinal stasis are very serious, and at the same time not particularly efficacious. Often a number of operations have to be performed; Patry has seen as many as five in one case. Appendicostomy is a much simpler operation, and even if it is not successful it can do no harm, for it does not produce any changes in the anatomy or physiology of the colon. Irrigations through the appendix fistula act mechanically rather than chemically. Oil is used first and then physiological salt solution. These irrigations cleanse the intestine and then stimulate it to do its own work; it decreases in size and finally returns to its normal physiological and anatomical condition. Rectal irrigations do not have the same effect because they are antiperistaltic and therefore unphysiological.

Patry describes the case of a young woman with severe intestinal stasis, who had not had a bowel movement for years except after enemata. Part of the transverse colon was resected and a colopexy performed; but the condition soon returned, and her general health was becoming very poor. Appendicostomy was performed, and 200 gms. of olive oil

followed by salt solution were given through the fistula. After awhile daily stools could be obtained without any pain. Then the intervals between the irrigations were increased, till finally only two a week were given. This was kept up for four months before the fistula closed. The patient is now in excellent health and has regained her normal weight. Successful cases of two other authors are cited.

Appendicostomy has also been used successfully in Hirschsprung's disease. It is also indicated in chronic intestinal obstruction, but not in acute. The intestine regains its normal function very rapidly after appendicostomy for peritonitis. The alternate filling and emptying of the intestine stimulates peristalsis.

A. Goss.

Taylor, J. M.: Visceral Stasis, Mechanical Obstructions, and Their Effects, Relievable by Rational Measures. *N. Y. M. J.*, 1915, cii, 231.

Fifteen years ago Taylor began experimenting by manipulation in cases presenting visceral obstructions and disturbances of tone, combining stimulus to vasomotor subcenters with pressure on the abdomen in lower quadrants, along the lines of Bourcart of Geneva and H. F. Graham.

The objective and subjective symptoms may be sketched as follows:

1. Objective: A pull on well relaxed abdominal walls affects the structures beneath, and membranes, veils, or adhesions yield to repeated tractions.

2. Subjective: In a normal abdomen there is only a moderate discomfort to these manipulations, but where abnormalities exist various subjective sensations are obtained. Subacute or chronic appendicitis gives a severe tenderness on dragging toward the umbilicus. Any adhesion gives a dull sickening pain, often a transitory nausea. Post-operative adhesions cause less severe pain. In pelvic or bladder diseases umbilical traction is painful.

The treatment consists of the following measures:

1. Mechanical pressure and traction on paravertebral structures.

2. Gentle, slow pressure from near the anterior superior spines toward the diaphragm, which relaxes spasm and increases peristalsis.

3. Two-hand compression lateral and upward, which stimulates peristalsis.

4. A slow, lifting pull on the abdominal walls following the diagram by H. F. Graham.

5. A voluntary compression and elevation of the abdominal walls, enhancing the muscular power of raising the viscera.

6. Lifting the head while lying prone and thrusting arms to the right, then to the left, which develops transversalis.

These procedures occupy about ten minutes and are repeated every third day. PHILLIPS M. CHASE.

Burke, J.: Diagnosis of Colon Cancer. *N. Y. St. J. Med.*, 1915, xv, 263.

The symptoms and signs of colon cancer depend upon three definite pathologic factors: (1) stenosis

of the bowel; (2) the accompanying intestinal catarrh; and (3) ulceration of the mucous membrane, or the tumor extending into some other organ or into the peritoneal cavity. When stenosis is the single feature, a patient can carry a carcinoma of the colon without giving marked clinical evidence of its presence until acute stenosis intervenes.

When an anæmic patient who enjoyed perfect health up to a certain given moment, particularly as regards his digestion, suddenly with or without dietary indiscretion begins to suffer with colicky pains, with rumbling noises in his abdomen and radiation of pains toward the anus, accompanied by rectal tenesmus, and either in addition to obstinate constipation or diarrhoea notices a great loss of weight and increasing muscular weakness, cancer of some part of the bowel should be immediately suspected. When the stools contain blood, mucus, or pus, or all three at one time the further suspicion of cancer is strengthened; and if a mass is also found in any part of the abdomen with or without visible peristalsis or intestinal rigidity, a positive diagnosis of cancer is assumed. The pains of intestinal cancer are localized around the umbilicus or spread diffusely in the lower abdomen. These pains while occurring frequently at the height of obstipation sometimes occur when there is fairly regular bowel movement; therefore, they do not depend upon intestinal rigidity but may sometimes be due to local peritonitis. The absence of colics, therefore, can never be construed against the diagnosis of a possible carcinoma of the large intestine. Profuse hæmorrhage from the bowel seldom occurs in colon carcinoma; small flecks of blood are very frequent. Tarry stools never occur in carcinoma of the colon. The copious evacuations which occur in the late stages of cancer of the bowel, are scarcely ever influenced by therapeutic measures directed against chronic intestinal catarrh, such as diet, opium, etc. In carcinomata which affect the descending colon and sigmoid flexure, there are symptoms somewhat peculiar to them, namely, of the rectum; either alone or combined with bladder tenesmus; and when these symptoms are present in an otherwise obscure case cancer of the large bowel must be thought of as a possible cause. There are cases in which the differential diagnosis between cæcum, carcinoma, and appendicitis in old people give rise to great speculation, when there exist elevation of temperature and sometimes repeated chills, as well as acute local pain. The differentiation between bowel carcinoma and appendicitis in elderly people depends more upon the previous history of the patient than upon the temperature. In differentiating cancer from tuberculosis of the cæcum, however, most careful examination of both lung apices for healed tubercular processes, the presence of Diazo reaction, the finding of tubercle bacilli in the stool; and the positive von Pirquet reaction, should guide the surgeon in the right direction. The chief cause of error in differential diagnosis of the hepatic flexure carcinoma are

gall-bladder and liver neoplasms and kidney tumors and occasionally duodenal induration. In malignant diseases of the sigmoid where the early pains are referred to the bladder and the left testicle, the error of confounding it with nephrolithiasis can obviously be made; but in the absence of pathological urinary changes, blood, pus, etc., the negative X-ray findings as regards stone in the kidney or ureter, would exclude kidney colic at once. The differential diagnosis between carcinoma of the sigmoid and diverticulitis is very difficult. In active sigmoid diverticulitis there is always a palpable mass, and with muscular rigidity as against carcinoma unless the peritoneal cavity is involved. A mass therefore, that appears suddenly in a patient who has complained a long time of pain and tenderness especially occurring in attacks, speaks for an inflammatory character of the process and against carcinoma; if the mass disappears and after a time returns, an inflammatory process is almost positive. In cancer there is secondary anæmia and great loss of weight and strength; in most cases of diverticulitis, the patients have been well nourished, of good color and sound musculature, and the weight loss very slight; frequently these patients are obese. The author concludes as follows:

1. Early diagnosis in colon cancer is the surest means to a surgical cure.
2. In cases of unexplained loss of weight and diminished muscular strength, with secondary anæmia in any adult above forty years, particularly if gastro-intestinal symptoms are present, cancer of the colon should be carefully considered.
3. Where a tumor is present in any of the four corners of the abdomen colon cancer must be thought of.
4. When peritoneal friction sounds are heard over the tumor it speaks positively for its intraperitoneal origin.
5. In sudden profuse hæmorrhage from the bowel the colon should be diligently investigated for cancer, particularly the sigmoid flexure.
6. When an adult complains of colicky pains in the abdomen, particularly when accompanied by disturbances of bowel function, colon cancer should be thought of as the probable cause.
7. In cases of suspected acute appendicitis in elderly people, cancer of the cæcum must not be lost sight of in the diagnostic deliberations.
8. In all cases where there is the slightest suspicion of colonic derangement the X-ray should never be omitted in the examination.
9. In all cases of suspected cancer of the bowel, X-ray examination should always be made.

C. G. HEYD.

Tölken, R.: Ekehorn's Operation for Prolapse of the Rectum in Children (Die Ekehornsche Operation des Mastdarmvorfalls bei Kindern). *Deutsche med. Wchnschr.*, 1915, xli, 427.

Prolapse of the rectum in adults is a permanent pathological condition, while in young children if

the predisposing factors are eliminated it tends to recover spontaneously, so that it may be treated by simpler methods than in adults. Tölken warmly recommends Ekehorn's operation. The child is anesthetized and the prolapse replaced. With the left index finger in the rectum, a needle is passed through the skin at the lower part of the sacrum and into the rectum; it is threaded with strong silk and drawn out again; the same process is repeated on the other side with the other end of the thread, and the two ends are tied together over the sacrum. The rectum is thus suspended in a sling. The suture can be removed after about two weeks. It is the simplest possible operation, but the results have been permanent, not only in the 9 cases, of which the histories are given by the author, but in all of the 14 that have thus far been reported in the literature. The only objection to be urged against it is the possibility of infection, but this has not occurred in any of the published cases.

A. Goss.

Back, I.: The Correct Life-History of Fistula-in-Ano. *Practitioner*, Lond., 1915, xcv, 31.

The author attempts to destroy misleading ideas of the causation of fistula-in-ano other than tuberculosis (5 per cent, the author), and to explain the cause of fistula-in-ano on anatomical grounds. He cites the usual classification of causes in most textbooks of surgery, and gives his idea of the origin.

The morphological development of the rectum and anus is completed about the twelfth week of intra-uterine life by the junction of the proctodæum and the hind-gut. At the level of this junction, and situated exactly between the two anal sphincters are the anal papillæ, five to eight soft whitish pyramidal protuberances above the surface of the mucous membrane. During the passage of a constipated stool one or more of these papillæ are torn down, a fissure resulting. The loose portion of mucous membrane becomes infiltrated with granulation tissue leaving a "sentinel pile." No deeper infection results because the whole area is exposed and natural drainage has been established.

When, however, instead of being torn right down the papilla is only detached from its base, an inadequately drained opening is made in the mucous membrane, infection follows, which leads to supuration and a fistula. Since the papillæ are situated between the internal and external sphincters the internal opening of every complete fistula is likewise to be found there.

The formation of the various kinds of fistula is as follows:

1. In the perianal fistula the pus makes its way to the surface in the perianal skin without involving the ischio-rectal fossa proper.
2. In ischio-rectal fistulæ the infection follows the line of least resistance, which is submucously down toward the margin of the anus, and thence upward into the ischio-rectal fossa, forming an ischio-rectal abscess. Then the tract makes its

way through the skin, a complete fistula-in-ano developing.

3. In fistula-in-ano, with high internal opening, the pus travels, as in an ordinary fistula-in-ano, downward; but at the same times it ascends from the original opening and makes its way into the rectum.

Pelviorectal fistulae, which have nothing to do with the rectum, are the late result of a primary focus of infection above the pelvic diaphragm, the pus making its way to the surface in the ischio-rectal fossa by passing through the levator ani muscle and traveling by the side of the rectum.

Granted the fact that the tract of a fistula-in-ano does not pass above, but below the external sphincter, the author thinks it unnecessary in operating to cut this muscle.

O. R. SEVIN.

LIVER, PANCREAS, AND SPLEEN

Schultze: Surgery of Acute Cholecystitis (Zur Chirurgie der akuten Cholecystitis). *Beitr. z. klin. Chir.*, 1915, xcv, 494.

Cholecystitis is not a clinical entity. There is a group of cases of acute cholecystitis caused by stones, and another caused by primary disease of the walls of the gall-bladder, a diffuse phlegmon entirely independent of the presence of stones. Between these two forms are intermediate stages.

It has not been long since acute cholecystitis was regarded as a purely medical condition, but now many surgeons think that early surgical operation is indicated, just as in acute appendicitis; but there is great difference of opinion as to the operation of choice. In Germany cholecystectomy is preferred by most surgeons, while foreign surgeons, especially English and American, prefer cholecystostomy. The latter group of surgeons hold that cholecystostomy is sufficient in most cases. The technique of cholecystectomy is more difficult and the operation more serious, the gall-bladder should be preserved as it may become necessary in later operations for the formation of anastomoses, and the loss of the gall-bladder involves serious physiological disturbances.

Schultze takes up a detailed refutation of each of these arguments and says that experience has shown that none of them is valid. He advocates early operation for acute cholecystitis, generally by cholecystectomy. Cholecystostomy should be reserved for exceptionally severe cases in which the patient's general condition is very bad. He has operated upon 25 cases, the operation being cystectomy in 21. All of the 21 cases recovered, those in which the common duct was not drained in an average time of 29 days, those in which it was drained in 32 days. The common duct should be drained only in case it contains stones or abnormal bile, or its walls show dilatation.

Autoplastic transplantation of omentum is the best method of stopping hæmorrhage from the liver.

A. Goss.

Thring, E. T.: Five Cases of Gall-Bladder Surgery. *Med. J. Austral.*, 1915, ii, 95.

The author describes five cases of gall-bladder surgery which were of particular interest from the viewpoint of diagnosis and treatment. The first case gave a history of typical attacks of biliary colic, but when the abdomen was opened no calculi were found, either in the gall-bladder or in the ducts. The gall-bladder was drained, however, but the author believes it would have been wiser to excise the gall-bladder instead of simply draining it. On the whole, Thring is much more inclined to do cholecystectomy than cholecystostomy.

C. G. HEYD.

Crohn, B. B.: The Early Diagnosis of Carcinoma of the Bile and Pancreatic Ducts. *Am. J. Surg.*, 1915, xxix, 270.

The author describes a useful diagnostic method in cancer of the bile and pancreatic ducts that will enable an earlier diagnosis to be made and better treatment instituted.

Only recently have surgeons attempted anything radical in the treatment of cancer of this region. As a rule the cases are allowed to progress until the hopeless stage is reached, before a diagnosis is made.

Cancers in this region originate from: (1) the common bile-duct—fairly common; (2) the ampulla of Vater—rare; (3) the duct of Wirsung—rare; (4) the papilla of Vater and neighboring duodenal mucosa—fairly common; (5) the head of the pancreas—less common; (6) from neighboring organs—fairly common.

The first four groups consist of tumors of small size, usually adenocarcinomata, which grow slowly and produce metastases late. Early, however, they obstruct the lumen of the ducts. Later, by ulceration, these ducts become somewhat patent.

Crohn considers the duodenal tube as a means par excellence of early diagnosis. In tumors of these ducts examination of the duodenal secretion shows an absence of bile. In addition, the absence of pancreatic ferments locates the tumor at or about the head of the pancreas. In 17 cases of neoplasms, 94 per cent gave the above results: No other condition will give this finding, as Crohn's reports show.

Those cases not showing this result were those in which ulceration had occurred, allowing the secretions to escape. In these cases the diagnosis must be made from clinical evidence. History will show a sudden clearing of the icterus which was of long-standing, rapid emaciation, septic temperature from ulceration, leukocytosis, and blood in the intestinal contents.

In diagnosing chronic pancreatitis, the duodenal contents will show the presence of pancreatic enzymes but in distinctly diminished quantity, and the presence of bile. This will occur before the characteristic stool or other evidences of disease.

An excellent diagnostic table based on the above findings is given.

In closing, Crohn recommends the two-stage Kausch operation as the best procedure in this condition. The operative mortality, however, is 43 per cent, with a permanent cure of 19.5 per cent.

PHILLIPS M. CHASE.

Einhorn, M.: A Clinical Contribution to Our Knowledge of Chronic Pancreatitis. *J. Am. M. Ass.*, 1915, lxxv, 149.

It is only recently that exact diagnoses of chronic pancreatitis have been made. An increasing number of operations and functional tests have been the chief source of aid.

Einhorn presents a series of cases in which the diagnosis was based upon the newer functional tests of the pancreas and of the digestive tract. The diagnosis was twice confirmed in three operative cases. The cases are grouped according to the symptomatology, as follows: (1) main symptom diarrhoea; (2) gastralgia, constipation, and weakness; (3) diabetes mellitus, dyspepsia, and weakness.

Representative of group one, four cases are cited. Diarrhoea, loss of weight, weakness, epigastric pain, and vomiting were the chief symptoms. The diagnosis was based upon the clinical syndrome, the faecal examination, presence of fat, starch, and

food remnants; and upon the diminution or absence of the pancreatic secretions as shown by the examination of the duodenal contents. In several cases a therapeutic response to pancreon, alkalies, and diastase was shown.

Representative of group two, characterized by gastralgia, constipation, and weakness, four cases are cited. As in the first group, the clinical syndrome plus the examination of the stools and of the duodenal contents made the diagnosis. In two cases of this group a hard and enlarged pancreas was found at operation.

Two cases belonged to group three. The combination of diabetes and the diminution in the pancreatic secretions established the diagnosis.

The prognosis is always grave, but depends upon the cause of the disease. The most favorable cases are those due to gall-stones in which the gall-bladder has been drained.

The most important points in the treatment are: (1) the removal of the cause where possible; (2) the procuring of better food assimilation by means of diatetic treatment; (3) aiding the impaired function of the gland by giving some of its prepared extracts such as pancreon or pancreatin.

J. R. BUCHBINDER.

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS. CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Davis, J. S., and Hunnicutt, J. A.: The Osteogenic Power of Periosteum; a Note on Bone Transplantation. *Ann. Surg., Phila.*, 1915, lxi, 672.

The authors carried out a number of experiments to determine the osteogenic power of the periosteum. They divided their experiments into 10 groups:

Group 1. *a.* The transplantation of free flaps of periosteum without bone particles into the muscles or subcutaneous tissue of the same animal.

b. The transplantation of free periosteum, without bone particles into the muscles or subcutaneous tissue of another animal of the same species.

c. The injection into the soft parts of small bits of periosteum without bone particles in suspension.

d. The transplantation of free periosteum with thin bone shavings attached, into soft parts of the same animal.

e. The transplantation of free periosteum without bone particles, congealed in a blood-clot, into the subcutaneous tissue of the same animal.

Group 2. *a.* The transplantation of pedunculated flaps of periosteum without bone particles into, or around, adjacent muscles.

b. The transplantation of pedunculated flaps of periosteum, with a thin film of bone attached, into adjacent soft parts.

Group 3. The subperiosteal resection of bone, leaving the periosteal tube undisturbed, as far as possible.

Group 4. The transplantation of bone and other substances with the periosteal tube after a partial subperiosteal resection of a rib.

Group 5. Silver wire experiments.

Group 6. The implantation of bone and also periosteum into prepared defects in the skull.

Group 7. Autobone in soft parts.

Group 8. Isobone in soft parts.

Group 9. Autobone in bone defects.

Group 10. Isobone in bone defects.

A number of radiograms taken at intervals show the workings of the transplants.

The authors give the following summary:

1. Free periosteal transplants did not produce bone in the large majority of experiments, even though osteoblasts were adherent to the transplants.

2. Pedunculated flaps of periosteum did not produce new bone.

3. Free periosteal transplants and pedunculated periosteal flaps with bone shavings attached produced bone in each experiment. From this it might be surmised that bone particles had been accidentally transplanted in those experiments in which bone was found after the transplantation of the free periosteum.

4. The removal of periosteum had little, if any, effect on the nutrition of a bone.

5. The surface from which the periosteum was removed showed very little overgrowth of bone, unless there had been considerable irritation of that surface, either by trauma or by infection. The area from which the periosteum was taken was covered by a thin, very adherent fibrous membrane, or the muscle tissue was adherent to the denuded area.

J. O. WALLACE.

Kisch, E.: Treatment of Surgical Tuberculosis at Low Altitudes (Über eine Behandlungsmethode der chirurgischen Tuberkulose in der Ebene). *Arch. f. klin. Chir.*, 1915, cvi, 706.

In view of the brilliant results obtained by Rollier and others in the treatment of surgical tuberculosis at high altitudes by heliotherapy, Kisch thought it well to try the results of similar methods at the lower level of Berlin. He reports 20 cases, with numerous illustrations showing the progress made. His method combines sunshine treatment with Bier's method of passive hyperæmia, and he concludes that with these two methods combined patients can be treated as well at home as at the mountains, provided they are in an atmosphere that is reasonably free from dust, for he finds that the action of the sun's rays depends to a considerable extent on the air's freedom from dust. Passive and active exercise of the joints is also an indispensable factor in the treatment. This is comparatively easy to carry out, as the constriction of the limb for hyperæmia makes the movements painless. In cases with fistulæ there is first an increase in the secretion and then a gradual decrease and finally cessation. Some cases with severe fistulæ healed in from four to six months. One case of severe lupus of the face and neck recovered completely in four months. Particularly good functional results were attained by the treatment.

A. Goss.

Bryant, W. S.: Acute Articular Synovitis of Cryptic, Nasopharyngeal Origin. *J. Am. M. Ass.*, 1915, lxxv, 163.

Bryant cites a case of acute polyarticular effusive synovitis involving the right hip, knee, and ankle. With a history of 6 weeks of joint inflammation, the patient was unable to stand or walk and was generally run down. Throat examination showed a red pharynx, and an enlarged soft adenoid which bled very readily. Treatment consisted of antiseptic post-nasal applications, which brought about recovery of the hip in five days, and of the other joints in 23 days. Bryant concludes that when in acute articular inflammation, the primary infection is not obvious, a cryptic infection probably thrives in the œsophagus.

R. G. PACKARD.

Cotton, F. J.: A New Procedure for the Cure of Chronic Synovitis. *Surg., Gynec. & Obst.*, 1915, xxi, 104.

Cotton has applied the theory of the filtering scar, used in eye work, etc., to the cure of chronic

joint hydrops of a type showing no underlying constitutional or local cause. The technique of this includes an eversion of the edges all around the opening, which is made in the quadriceps bursal portion of the knee-joint; an eversion which renders any epithelialization of the scar impossible. This operation has been successful in two cases as follows:

The first was a case of intermittent hydrops in which the effusion did not occur after operation, though the intermittent pain, previously preceding effusion, still persisted.

The second case was a chronic hydrops, pure and simple, in which both knees were operated upon with the result that the fluid disappeared. An occasional reappearance of a small amount of fluid on overexertion was readily dealt with, the fluid absorbing quickly under a slight compressive bandage which had been of no use previous to the establishment of the filtering scar.

Hanks, M. E.: Damaged Pelvic Joints. *J. Am. Inst. Homœop.*, 1915, vii, 1408.

The general belief that the pelvic joints are immovable has been disproven, and it is claimed that these joints are more liable to injury than any other. The following facts support this claim:

The bones are simply in apposition, therefore, easily displaced. The inter-bone surfaces are nearly smooth, and the strength of the joint depends almost entirely upon the ligaments and the neighboring muscles; the position of the pelvis renders it more vulnerable to trauma.

When we speak of a displacement, or dislocation of the joint, it must be understood that there is not often a wide separation of the articular surfaces. The X-ray does not always reveal a deformity, but the bones slip enough so that irritation of the inter-bone surfaces results, or so that their relationship is disturbed, which, in turn, disturbs the relation between other structures. When the strength and stability of the joints are disturbed, the pelvis tilts and the whole body is thrown out of line, which necessitates a constant muscular effort to maintain the equilibrium of the body and leads to prostrating fatigue and a state of general ill health which to the inexperienced may seem to be out of all proportion to the physical findings. The muscular strain and fatigue are communicated to the muscles of the back, the thighs, and even to the feet. The relation of the feet to the back is a very close one, and weakened arches or flat-foot are found in many of these cases. More than that, the large nerves which pass over the sacro-iliac joints are frequently irritated, as can easily be understood. Branches from the sacral plexus and from the lumbar plexus cross the sacro-iliac synchondroses.

The cases of this condition are either physiological, traumatic, or postural. Pregnancy, menstruation, and the atonic condition following severe illnesses come under the first heading. Under traumatic causes are direct blows to the pelvis, twists of the

back, and heavy strains. Under the third heading come the muscular strains caused by faulty position, dress, or shoes. Pain is the most common symptom; it is worse after exercise on the affected side. It may be referred to the area over which the irritated nerves are distributed; sleep is usually interfered with, and the patient assumes certain characteristic attitudes and habits of standing and walking. Relaxation or subluxation of the pelvic joints often causes neurosis of the pelvic organs.

In treating these cases, the author suggests first the use of adhesive strips applied tightly to the lower spine to limit motion. Front-laced corsets are also of great aid, if tight around the pelvis and loose over the abdomen and waist. If the case has developed spinal deformities, a brace supporting the spine and shoulder girdle as well as the pelvis is often helpful. Exercise is extremely important. These exercises should strengthen the gluteal and back muscles.

DEFOREST P. WILLARD.

Brickner, W. M.: Prevalent Fallacies Concerning Subacromial Bursitis; Its Pathogenesis and Rational Operative Treatment. *Am. J. M. Sc.*, 1915, cxlix, 351.

The author refutes the current misconceptions concerning subacromial bursitis, and sets forth his conclusions, based on the careful study and treatment of a large number of cases, that there is no diagnostic point of tenderness; most often the tenderness is anteriorly, over the lesser tuberosity; there is usually little or no swelling; the shadow seen radiographically is due, not to thickening of the bursal wall, but to a calcareous deposit found in or on the supraspinatus or infraspinatus tendon, and therefore beneath, never within the bursa; not only is the removal of the bursa unnecessary, but its complete excision as some books recommend, is impossible without mutilating dissection; subacromial bursitis is traumatic, resulting from the bruising of the bursa and the underlying tendon, by external violence or, more often, by an unduly vigorous active or passive abduction of the arm; it does not arise from bacterial or toxic irritation.

The calcareous deposit appears early, even in a few days after trauma. Whether seen early or late, within or upon the tendon, it may be semifluid or solid, small or large, single or multiple. It does not come from the bone.

He describes the technique of the operation he employs, which experience has shown him to be the "surest means of early cure." The patient is placed partly on his side with a cushion under the affected shoulder. From the outer border of the acromion downward over the greater tuberosity, a two and one-half or three-inch vertical incision is made, exposing the deltoid muscle, which, having been split, is retracted. This discloses the roof of the bursa, which is drawn up with forceps away from the floor, incised, and retracted, exposing the

interior of the sac. After all adhesions have been divided, the bursa is explored with curved scissors and the finger, while the arm is manipulated if necessary. Next, the bursal floor is incised in the same line, and dissected up from the supraspinatus tendon. If a deposit is thus found it is removed with a blunt spoon. The tendon usually reveals a small transverse tear, within which is more of the deposit. Should no extratendinous deposit be found, the supraspinatus tendon is opened axially at the site indicated by the radiograph, and the deposit is spooned out. In either case, frayed edges of tendon and adhering granules of lime are removed, and the tendon wound sutured with vertical or transverse chromicized catgut stitches, according as the deposit is extra- or intratendinous. If the deposit is not found in the supraspinatus tendon, it is removed from the infraspinatus tendon. The floor of the bursa is reconstructed with a fine suture of catgut; the interior of the bursal sac is thinly anointed with vaseline; its roof is sutured; the muscle and skin being closed without drainage.

The arm is dressed in abduction of about 120° in a light plaster of Paris bandage, and remains so until the first dressing—about eight days. The post-operative treatment consists in abducting the arm, especially at night, and exercises, gentle at first, but increasing in vigor about the third week, as necessity dictates. The restoration to full function varies in time, depending on how long the patient has been suffering from the malady previous to operation.

Moschcowitz, E.: Histopathology of Calcification of the Spinatus Tendons as Associated with Subacromial Bursitis. *Am. J. M. Sc.*, 1915, cl, 115.

The author describes the histological findings in a study of four cases of calcareous deposits in and upon the supra- and infraspinatus tendons associated with adhesive subacromial bursitis. Each case is discussed in some detail as to the history of the case and the various histological findings.

In all cases the findings can be briefly summarized under the following heads:

1. Tendinitis: The amount of granulation tissue in the tendon fibers corresponds in a general way to the duration of the illness.
2. Necrosis: Necrotic tissue was found in all four cases. The author believes necrosis is due to actual death of the tendon due to impaired blood supply.
3. Calcification: Lime is found in small sand patches in necrosed tissue or diffuse massive calcification of necrosed tissue and isolated in discrete sharply defined nodules embedded in the tendon or granulation tissue.

The author believes that as yet there is no satisfactory explanation as to the cause of the appearance of lime, although many theories have been advanced. These theories are discussed in some detail.

C. C. CHATTERTON.

Graef, W.: Schlatter's Disease (Über Schlatter'sche Krankheit). *Beitr. z. klin. Chir.*, 1915, xcv, 647.

Schlatter in 1903 described a disease characterized by thickening of the tuberosity of the tibia. He himself was inclined to think it traumatic in origin, but the majority of other authors think it is inflammatory or dystrophic. Schultz has recently shown in his cases from the Bier clinic that most of the cases are bilateral, and that there are also thickenings of the periosteum at the insertion of other muscles and ligaments. He concludes from this that Schlatter's disease is a systemic disease, consisting of weakness of the connective tissue and increased tendency to thickening of the periosteum at the points of insertion of muscles and tendons. Rost recently found a positive antistaphylolysin reaction in a case of Schlatter's disease.

Graef gives the history of a case in a 16-year-old boy, in which the antistaphylolysin reaction was also positive. While of course so few cases are not conclusive, the results in these two cases would indicate that the disease is due to a staphylococcic infection. A. Goss.

Bernheim, B. M.: Threatened and Real Gangrene of the Extremities as Seen by the Modern Surgeon; Its Causes and Treatment. *South. M. J.*, 1915, viii, 512.

Different types of gangrene are discussed and their relief by arteriovenous anastomosis.

The septic embolic type of gangrene is passed over with the presentation of a case instructive in its suggestions of treatment, and emphatic in the belief that the vascular system is not the primary cause of the resulting gangrene.

In traumatic gangrene, blood-vessel suture or transplantation is recommended when possible. Those cases which can be aided best by "reversal of the circulation," cases "consequent upon a systematic circulatory lapse," cases caused by sclerosis, or some spastic vascular process, lend themselves best to surgery of the vessels.

Cases of thrombosis are grouped separately from the thrombo-angiitis of Buerger. In the former the thrombus may be removed, relieving the pain supposedly caused by the muscular contraction of the blood-vessel wall around it. In the latter the vein is involved and organized tissue and a part of the vessel wall so attached that removal is impossible. In threatened gangrene of an extremity from arteriosclerosis, temporary resuscitation may be gained by arteriovenous anastomosis.

H. B. THOMAS.

FRACTURES AND DISLOCATIONS

Claybrook, E. B.: Position of Stability in the Treatment of Fractures. *Surg., Gynec. & Obst.*, 1915, xxi, 130.

The great weak point in the literature on the treatment of fractures, that has not been remedied by

the recent flood of papers on the subject, is that no one has told how to reduce a fracture and know that it is satisfactorily reduced, by the closed method. This can be done by testing for a position of stability as follows: Extend the limb and manipulate the ends and when they seem to be in good position, gently relax the traction, carefully supporting the limb. If no slipping by results, make gentle pressure on the lower fragment toward the body; if still no slipping occurs the pressure should be increased to a considerable extent and the serrated ends engaged and slightly impacted. If no slipping occurs, a good result will be secured if alignment is maintained and axial rotation prevented. The splints do not have to be tight to accomplish this. If after repeated efforts no position of stability can be secured, then it is assured that a good result cannot be secured without direct fixation by plates or otherwise, as the ends are too oblique or soft parts are interposed.

If the theory of a position of stability is correct, then the theory of extension is untenable, as it defeats the purpose and breaks up the position of stability. Extension does not fulfill its alleged function of maintaining the length of the limb.

The bone itself is the best thing to maintain the length of the limb, and even if it has been broken if the ends are brought together and kept together there can be no shortening. If all fractures are carefully tested out and treated this way only from 5 to 10 per cent will need direct fixation.

Fränkel, M.: Treatment of Severe Fractures with Stimulating Röntgen Doses (Zur Heilung von schweren Knochenbrüchen mittels Röntgenreizdosen). *Med. Klin.*, Berl., 1915, xi, 211.

Bernhard states that in his dry mountain district burns heal remarkably quickly, the sunshine and dry air evidently promoting healing. Aimes found that an extensive burned area, which for months had refused to heal, soon healed completely under exposure to the direct sunlight. These and similar experiences by others justify the application of the chemical rays in all old torpid lesions.

Fränkel applied stimulating doses of the röntgen rays in several cases of old fractures that refused to consolidate. The patients were 4 children, 3 women between 18 and 35, and 2 men of 33 and 46. The results confirm the value of the chemical rays in starting the regeneration of bone tissue and promptly healing the fracture. The dosage in such cases must be merely stimulating, as the tissues are otherwise sound and their further growth must not be interfered with. A. Goss.

McQueen, R., and Boothby, L. H.: Treatment of Septic Compound Fractures and Wounds by Ionization of Salicylate of Sodium. *Lancet*, Lond., 1915, clxxxix, 69.

The observations of the authors as to the above method of treating septic gunshot wounds are

based on their experience in 50 cases of the worst nature, beginning 48 hours from the time of injury.

Ionization with sodium salt produced marked abatement of suppuration. One application per day caused the wound to look healthy, the discharge to diminish; and the patients were free from pain in 3 to 4 days.

Application of the sodium salicylate in solution alone, without ionization, was invariably followed by recurrence of suppuration, and in a few days the wounds were as septic as ever. When application of ionization with the sodium salt was again tried the same improvement in the symptoms was noted.

Ionization of various other solutions failed to give as good results as the salicylate of sodium.

The method employed is to first clean and syringe the wounds with sterilized water, or preferably with a 4 per cent solution of sodium salicylate, and if necessary to swab the wounds, sterilized swabs dipped into the solution being used. After the wound is thoroughly cleaned it is plugged firmly and even tightly with sterilized gauze, or ribbon gauze for the small cavities or pockets, soaked in a warm 8 per cent solution of sodium salicylate, then over all is laid a gauze pad soaked in the solution; again, over this is placed a piece of lint, saturated with the solution and folded four times. This pad is pinned to a copper mail chain electrode attached to the positive pole of a galvanic battery, and a current of from 5 to 30 milliamperes is passed for at least a quarter of an hour. The chain electrode and pad are removed and a dry piece of gauze is put over the wet dressings with some wool and kept in position by a few turns of a bandage.

No other antiseptic should be used, not even solution of boric acid. The wound should be washed out with sterilized water only before using the sodium salicylate. All cavities leading off from the main wound and spaces between broken and splintered bone must be packed with the gauze, and if separate pieces of gauze are used they must all be in contact with the main plug. The gauze must be plain, sterile gauze and must not be prepared with any antiseptics, such as mercuric cyanide or sal alembroth. The current should be gradually increased and diminished and not turned on and off suddenly. The solution of sodium salicylate should be warm.

Relief from pain is so marked that by the fourth day patients are free from pain; granulative tissue starts about the fourth day, and big cavities fill up in a very short time. From the favorable account given the method is certainly worthy of trial.

LOUIS A. LAGARDE.

Fiedler, O.: Colles' Fracture. *Wis. M. J.*, 1915, xiv, 42.

The author discusses fractures in and about the wrist-joint and describes in detail the fracture of the lower end of the radius to which Colles first called attention one hundred years ago.

Fiedler maintains that the results of treatment

are unsatisfactory in from 85 to 92 per cent of cases of this injury, which must be due to ignorance or carelessness on the part of the surgeon.

Colles' fractures are always impacted and this impaction should always be broken up in order to secure an accurate reposition of the fragments and ideal healing results. Stiffness and contractures are the results of bad treatment. Immobilization should not be continued for more than ten to fourteen days. Old ununited Colles' fractures call for the open method of treatment, with either plating or nailing of the fragments.

R. B. COFIELD.

Fairchild, W. E.: Fractures in the Region of the Elbow. *Wis. M. J.*, 1915, xiv, 46.

Fairfield criticizes the old school method of handling fractures involving the elbow-joint. He discusses each fracture separately and gives his idea as to the proper treatment. Errors in handling this accident are often due to a failure to recall the character of the elbow-joint and a lack of knowledge of the landmarks in the normal elbow.

There are two injuries in the region of the elbow-joint where an open operation may unhesitatingly be undertaken by any surgeon possessing ordinary skill and equipment: one is a fracture of the olecranon and the other is a displacement of the head of the radius.

R. B. COFIELD.

Albee, F. H.: The Bone-Graft Peg in the Treatment of Fractures of Neck of Femur. *Ann. Surg., Phila.*, 1915, lxii, 85.

The author advocates the use of bone-pegs cut from the tibia for use in holding together the fragments of bone in fracture of the neck of the femur. The metal nails hitherto used have, as foreign bodies, proven a hindrance rather than an aid to union. They tend to prevent the formation of callus and become loose and useless because of necrosis of the surrounding bone which they produce. A bone-peg, on the other hand, acts not only as a support but as a stimulus to callus formation.

As to technique, two incisions are made, one anterior to the fractured neck and another over the great trochanter. A slender piece of bone of sufficient length is cut from the tibial crest and shaped into a round peg by means of a dowel attachment to the motor drill with the leg in abduction. A drill hole is then made longitudinally through the neck of the femur, the depth into the head being gauged by marks on the drill. The hole is made a trifle larger than the peg which insures a snug fit yet prevents necrosis from too much pressure.

The leg is maintained in abduction in a plaster spica extending from the toes to the axilla for six weeks, the wounds being dressed through windows cut in the cast. A shorter spica is then worn six weeks longer. This operation is believed to be indicated in all ununited fractures of the neck of the femur.

W. A. CLARK.

Barber, C. H.: A Useful Splint for Compound Fractures of the Leg. *Brit. M. J.*, 1915, ii, 47.

The splint is made of a 6-inch board, 2 feet 8 inches long; at one end is a small piece 7 inches by 14 inches, at the sides of which are two other smaller pieces forming a box for the foot; between the sides is fastened a small heel-rest. On each side of the knee are two upright pieces 9 inches wide and 13 inches high, between which is a double inclined plane to go under the knee. A T-shaped piece 21 inches long, with the top of the T resting on the top of the knee-box and the small end fastened to the board at the bottom of the foot with a peg to answer as a pivot, is used to fasten slings to in which the leg is suspended. This piece can be moved aside when dressings are being applied. Adhesive strips at the knee extend around the proximal side of the knee-box. Other strips of adhesive at the ankle are pulled through two slots in the footboard and around a wedge of wood. By adjusting the wedge, any desired amount of extension can be obtained.

C. A. STONE.

Köhler, H.: Arthritis Deformans in Subluxation of the Hip (Die Arthritis deformans bei subluxatio Coxæ). *Ztschr. f. orthop. Chir.*, 1915, xxv, 89.

There have been various theories as to the causation of arthritis deformans. Preiser holds that it is due to an anomalous position of the acetabulum, causing abnormal static conditions. The pelvis, femur, leg, and foot normally form a static unit. If this unity is interfered with there is a pathological lack of coaptation of the joint surfaces. Through primary variations in the position of the acetabulum parts of the articular surface are not in articulation as they should be. Atrophy occurs in the part of the articular surface that is not in contact, leading to arthritis deformans. The anomalous position of the acetabulum is the cause of an abnormally high position of the trochanter.

Köhler agrees with Preiser that arthritis deformans is generally due to disturbance of this static unity. To be sure acute or chronic infections may lead to changes in the form of the joint, but this is of only secondary importance as a cause of the condition. He describes cases in support of his view: 5 of congenital subluxation of the hip with arthritis deformans, with special reference to the formation of osteophytes, 5 of non-operative replacement of a displaced hip-joint, followed by arthritis deformans, and one of operative replacement with the same sequela.

A. Goss.

SURGERY OF THE BONES, JOINTS, ETC.

Savariaud, M.: Injection of Salt Solution into the Femoral Vein During Amputation of the Femur and Disarticulation of the Hip (L'injection massive de sérum dans la veine fémorale au cours de l'amputation de cuisse et la désarticulation de la hanche). *Bull. Acad. de méd., Par.*, 1915, lxxiv, 59.

There is great danger in amputating the lower limb in cases where there has already been a great

loss of blood; the danger increases as the upper end of the femur is approached and is greatest in exarticulation of the hip-joint, especially in patients with gangrenous septicæmia who have scarcely any pulse. Many surgeons refuse to operate in such cases, but Savariaud has found that he can operate with safety since he has adopted the plan of injecting a large quantity of physiological salt solution directly into the femoral vein. As much as 1,500 ccm. can be injected in two or three minutes; whereas the injection of as large a quantity subcutaneously would require so much time that it would be of no practical value in the operation.

Savariaud has never lost a patient from shock; on the other hand, the pulse improves so much during the operation that an observer who had noted the pulse before the operation would almost believe on returning and noting it after the operation that another patient had been substituted. As the ligated femoral is under the surgeon's eyes he can see the rise in blood-pressure during the operation. In addition to being more rapid the intravenous injection is three times as efficacious as the subcutaneous injection; and the size of the femoral vein makes injection into it preferable to that of any of the smaller veins. Another advantage of the rapid injection is that it makes the smaller arteries bleed, so that it is easy to locate and ligate them. At first the author feared that air would get into the veins, but he has found that the small amount that does get in is absorbed on its way to the heart without doing any damage.

It has been objected that the method might produce embolism, but Savariaud cites a case in which the patient had gangrene of the whole lower limb and the iliac veins contained a clot 12 cm. long, which he extracted and finished the injection without any signs of embolism appearing.

ORTHOPEDICS IN GENERAL

Young, J. K.: Orthopedic Technique. *Surg., Gynec. & Obst.*, 1915, xx, 729.

Young describes at length a special technique that he used in some of his orthopedic work and offers the following selected cases as illustrative of the methods employed:

Total excision of the clavicle. The patient suffered from osteomyelitis of both clavicles, from discharge, abscess, presence of staphylococci, and necrosis by the X-rays. The clavicle was detached at both extremities by an incision made over the distal and proximal ends, grasping the bone with forceps and dissecting free with an Allis dissector. The periosteum was thickened and preserved in the dissection. The cavity was gently curetted and packed with sterile gauze. Abscesses were evacuated and catgut drainage inserted and the periosteum brought together, except at the center, with catgut and the skin closed with silkworm-gut. The operation was followed by perfect restoration of function.

Forcible reduction of dislocation of the ilium. Young mentions the case of a young carpenter, who while reaching for a heavy piece of timber experienced severe pain in the lumbar region and later down the leg. The anterior portion of the ilium, on the right side, in front was prominent; the posterior superior spinous process on the right side was depressed one inch; and the lumbar spine acutely curved to the right. X-ray showed separation of the pubis, some separation between the last lumbar vertebra and the sacrum. Buck's extension was applied to the left leg for ten days; the patient was then placed on the right side, and under ether the trunk was fixed and strong traction made downward and forward. A plaster of Paris cast was applied and he was returned to bed, and leg extension continued for ten days. He left the hospital with the deformity corrected, and wearing a spine brace. The deformity has not recurred.

Early operation for psoas abscess. Young follows the method of Treves until he reaches the quadratus lumborum muscle. Treves divides the latter as close as possible to the transverse processes, the incision being made to the full extent of the skin incision. He inserts a blunt dissector into the fibers of the quadratus to the outer side of the extremity of the transverse process of the third lumbar vertebra, which he uses as a guide, and separates the fibers sufficiently to avoid wounding the abdominal branches of the lumbar arteries.

Spina bifida — excision of the sac. The case was a two-weeks' old child, with a multilocular meningocele that had ruptured but was not infected. Six months later the author devised a special technique. Two fluid ounces of cerebrospinal fluid were removed from the cyst and preserved warm in a syringe in case convulsions should occur from excessive loss of fluid. A large incision was made extending into the sound skin, dissected up, and the adherent part of the sac removed. No flaps of bone were used to close the opening, the latter being closed by through-and-through catgut sutures through its base and a purse-string catgut suture. A flap was made from the surrounding parts and the skin-flaps brought together with silkworm. One ounce of fluid was returned to the spinal canal. Infection was prevented by a rubber dam attached to the skin by collodion below the line of incision. Broad strips of adhesive plaster were placed over the gauze dressing to prevent tension on the stitches; the strips were kept on the face for two weeks. The infant was nursed by the mother; enemata were given—no voluntary bowel movement being allowed. Primary union resulted. The child still lives.

New operation for recurrent dislocation of the shoulder. The bicipital groove was exposed, the cephalic vein displaced outward; the lower half of the pectoralis major divided close to and so separated from its attachment that leverage action on the humeral shaft was diminished so that it could no longer be dislocated. The same was done to the trapezius. On the particular patient mentioned by

Young, the insertion of the trapezius could not be reached through the same wound, so an additional incision was made in the axilla. Deep catgut was used for the pectoralis major and deltoid; the skin edges were closed with continuous suture; and the arm dressed in extension on a triangular splint. Extension was maintained for two weeks.

Arthrotomy of the knee. In some cases the author advises a semicircular incision, as affording a thorough exposure of the joint. He employs three knives. With the first knife he makes a skin incision slightly below the patellar ligament; with the second he divides the patellar ligament, taking care not to divide the lateral ligaments; with the third knife he divides the ligamentum mucosa and exposes the joint. The synovial membrane is brought together with fine chromacized gut; the patellar ligament is sutured with kangaroo tendon and the skin incision with silkworm gut. Dry gauze dressing and a posterior bracketed splint are applied. Massage, mechanical devices, etc., complete the treatment. The extension remained completed after operation, and there has been no recurrence.

Anastomosis of the external and internal popliteal nerves for infantile palsy. A diagonal incision was made across the popliteal space, from the inner side above to the outer side below. The sciatic nerve was located at the upper part of the incision, the internal popliteal near the median line, the external popliteal on the outer side. The external popliteal was divided near the upper part of the internal popliteal, carried across, and a long incision made in the internal popliteal. The proximal extremity was inserted in this cut, so that the axis cylinder pointed in the direction of the body, and was held in place by three sutures. The proximal extremity of the divided nerve was covered with a flap of fascia, and sutured down so as to prevent the formation of a neuroma. The limb was encased in plaster before the patient recovered from the anæsthetic. Sensation returned in 24 hours. The reactions of degeneration at once contra-indicate the thought of surgical interference.

Tubby, A. H.: Orthopedic Surgery. Practitioner, Lond., 1915, xcv, 96.

The more common orthopedic affections which come to the attention of the physician in general practice are: limping in children, lateral curvature of the spine, and infantile paralysis. Limping in children may be due to the hip, knee, or ankle, (tuberculosis) to congenital dislocation of the hip, coxa vara, rachitis, or fracture of the femoral neck. Lateral curvature may be manifested by one shoulder being higher than the other or by one hip being larger than the other. The scoliosis may be postural or structural. Cases of the former may be corrected by exercises but those of the latter require instrumental support.

Infantile paralysis in the acute stages should be treated by absolute rest and free purgation. Later the muscles should have gentle massage and pro-

tection by braces to prevent contractures. The use of silk ligaments to replace paralyzed muscles and support a flail-joint is satisfactory if infection is avoided. The silk may be fastened to periosteum or to bone. Lovett prefers the bone method. It is most frequently used to support the foot in toe-drop. The silk extends from the tarsus under the annular ligament to the lower third of the tibia through drill-holes in the bone. The silk induces a growth of fibrous tissue which serves as a ligament, the silk alone not being depended upon for permanent function.

W. A. CLARK.

Fiske, E. W.: The Prognosis of Congenital Club-Foot and Its Relation to Non-Operative Treatment. *J. Am. M. Ass.*, 1915, lxx, 375.

Fiske draws his conclusions from the records of about two hundred cases of congenital club-foot

treated in the Children's Hospital, Boston, between September, 1907 and January, 1913.

Important factors in the prognosis of congenital club-foot are: (1) the age of the patient, (2) rigidity of the foot, and (3) the method of treatment employed. The prognosis varies in proportion to the flexibility of the foot, which is usually in direct proportion to the age of the child.

The results in calcaneovalgus are not so good as in equinovarus, largely because of delay in diagnosis and failure to maintain overcorrection. Absolute overcorrection of the foot and constant surveillance of this position until the structures have become permanently readjusted are absolutely essential.

The manipulative treatment is almost twice as successful in producing satisfactory results as the treatment in which operative procedures have been instituted.

R. B. COFIELD.

SURGERY OF THE SPINAL COLUMN AND CORD

Young, J. K.: Treatment of Scoliosis. *Am. J. M. Sc.*, 1915, cl, 109.

The author briefly describes the various types of scoliosis, suggests methods of examining cases, and presents elaborate treatment for the so-called functional form.

He believes that the treatment of the functional or static form has been overlooked, because of the increased attention of late to the treatment of the rotary or organic type.

It is necessary to distinguish the functional type from the rotary type, and this can be done in the following manner:

1. The history of the case is important as the cause should always be considered.
2. The examination of the patient in the Adam's position.
3. The differentiation of the functional form from the lateral bending of the English type.

The functional type is classified as to the etiology: The first is habitual, the second static, the third occupational.

In the organic form true rotation exists, and the diagnosis is made by X-ray examinations, examination in the Adam's position where the curve persists on the convex side, and third, where by suspension the curve is only slightly affected.

The organic group should be treated by forcible methods. The functional group has been treated with much success by exercises and corrective measures, as follows: (1) development of the weak muscles by exercises; (2) slight overdevelopment of the weak muscles; (3) uniform development of all muscles; (4) employment of special movements to prevent relapse.

A description of how the treatment should be carried on is given in some detail. Apparatus such as rings, ladders, and trapeze are used. Braces are unnecessary in mild cases. A light corset

support may be used to help the more severe cases.

Visual errors, such as flat-foot, and asymmetry in the lower limbs, should receive attention before the treatment is begun.

C. C. CHATTERTON.

Patry, G.: Surgical Treatment of the Gastric Crises of Tabes (*Le traitement chirurgical des crises gastriques du tabes*). *Rev. méd. de la Suisse Rom.*, 1915, xxxv, 297.

Patry reviews the results of operation for gastric crises in tabes and describes in detail a case of his own. He concludes that the operation is justified in spite of its high mortality and the risk of recurrence, because the crises are incurable without operation and they are often for years the only manifestation of tabes. He thinks that Guleke's method is the operation of choice, for though it is more difficult it guards against some of the complications met with in other methods. Though the operative mortality is higher the ultimate results are better than with Förster's original method.

The operation proposed by Sauv  and Tinel seems to promise still better results, but it has only been worked out experimentally thus far, so no clinical results are available. They propose the ligation of the intercostal nerves between the ganglion and the dura.

In Patry's patient, a man of 53, the seventh, eighth, and ninth pairs of posterior roots were resected; while the tenth pair was being resected the pulse and respiration stopped suddenly, but heart action was resumed spontaneously in a few seconds and pressure on the thorax started respiration. This complication can be avoided by deadening the sensibility of each nerve just before it is cut. There was great improvement in this man's general condition and cessation of the pains during the six weeks he was in the hospital, but nothing has been heard of him since then.

A. Goss.

SURGERY OF THE NERVOUS SYSTEM

Schoppe, W.: Operative Treatment of Sciatica (Die operative Therapie bei Ischias). *Zentralbl. f. d. Grenzgeb. d. Med. u. Chir.*, 1915, xix, 1.

Schoppe reviews 35 articles on this subject and discusses the technique and results of several methods of operative treatment, including severing the nerve, exposing and stretching it; neurolysis by Bardenheuer's method, which consists in embedding the nerve-roots in the soft tissues; Hölscher's method of dissecting the nerve free from the surrounding connective tissue and placing a carbolic acid tampon around it for three days; and Stoffel's method, which suggests that sciatica is not a clinical entity, but that different cases result from neuralgias of various motor and sensory nerve bundles in the sciatic region. He cites cases in which recovery resulted from the resection of parts of various nerve bundles; his method necessitates a closer

study of the anatomical conditions in the sciatic region and an adaptation of surgical treatment to the findings.

The author concludes (1) that all of these surgical procedures should be renounced more and more in favor of physical methods and injection of the nerve; (2) that surgical methods are uncertain in their results and there is great danger from some of them, while on the other hand there has been great improvement in the results from injection; (3) that neurolysis and Stoffel's methods may have some value in the future, but efforts should be devoted rather to improving non-operative methods and rendering operation unnecessary. A table is given showing the results in all the published cases of nerve stretching. In many cases stretching not only did no good, but caused serious and permanent injury.

A. Goss.

SURGERY OF THE SKIN, FASCIA, AND APPENDAGES

Pollitzer, S.: Cancer of the Skin. *N. Y. M. J.* 1915, cii, 16.

The author discusses briefly the well-known local manifestations of cancer in skin and tongue lesions. He calls attention to the need of distinguishing between secondary skin cancer and epithelioma. Skin cancer not epithelioma is always secondary. He calls attention to the frequency of the failure to make a diagnosis of the early lesion of the different forms of skin cancer. He gives a description of the points which make for a differential diagnosis of the different forms.

Cancers of the skin secondary to visceral lesions usually occur on the upper part of the trunk; are few in number and may be only one. Skin lesions secondary to mammary growths are common. The primary growth may be small.

Cancer *en cuirasse* is secondary, extremely rare, and is marked by the boardlike hardness of the affected area, slow extension, presence of pinhead, shining, lesions that resemble lichen planus papules, and by itching and œdema of the arm on the affected side.

Epitheliomata are classified under two groups: superficial, flat or discoidal; and deep or nodular.

The rodent ulcer is a modification of the superficial variety according to English writers.

Paget's disease of the nipple sometimes occurs in the scrotum, thighs, buttocks, abdomen, etc. A better term is malignant papillary dermatitis. Superficial lesions remain stationary for many years. The deep or nodular varieties are more apt to extend rapidly. The involvement of any persistent crusted or ulcerated lesion of the face or hands in a patient at or after middle age is probably

epithelioma. The hard, raised, waxy border, the hard nodular base, the tendency to bleed on removal of the crust, a history of gradual development of a previous "existing fleshy mole," or of a long-continued scaling or warty patch are sufficient to warrant a diagnosis of epithelioma.

Differential diagnosis is from lupus, chancre, and ulcerating gumma.

Lupus is a disease that has its inception in childhood. Epithelioma is a disease of advancing years. The profuse secretion of ulcerating gumma differentiates it easily.

The Wassermann reaction tends to cause confusion, as epitheliomata may develop in a specific.

Epitheliomata are more frequent in males than females, as statistics of the American Dermatological Association show. The reports cover observations on 700,000 cases of skin disease seen by the association during a period of thirty-four years.

During the first fourteen years the ratio of epithelioma to other skin diseases was 87 in 10,000 cases; the next ten years, 109 in 10,000; the last ten years, 190 in 10,000. Therefore the incidence of cancer of the skin has more than doubled in the practice of American dermatologists in the last period as compared with the first. Seventy-five per cent of these occur on the face, probably due to exposure to traumata of all kinds.

Chimney-sweep's cancer has been eliminated in England by the passage of a law forbidding the cleaning of chimneys by men climbing through them.

Any condition of the skin or mucous membranes which results in a loss of the normal elasticity of the surface epithelium may cause epithelioma

through the tendency to repeated small lesions of the epidermis due to its altered conditions. The syphilitic is prone to develop epithelioma.

The author says the treatment of epidermic moles by electrolysis, caustics, freezing, etc., should be stopped, as he has seen three cases of epithelioma develop from moles so treated.

He advises excision of the early lesion by the knife, and where this is not possible, by reason of the situation of the lesion, their removal by the destructive agents, X-ray, radium, chemical caustics, etc. Whatever the method, thoroughness of removal is the keynote to success. DONALD GORDON.

Schalek, A., and Schultz, O. T.: An Unusual Case of Generalized Non-pigmented Sarcoma of the Skin. *J. Am. M. Ass.*, 1915, lxiv, 1901.

The author states that as a rule there is a great deal of confusion between non-pigmented sarcoma of the skin and mycosis fungoides. The latter, however, has a premycotic stage, subjective symptoms, and a tendency to ulcerate, which the former does not exhibit.

The authors report an interesting case of a white patient, a laborer, aged 39, with negative family, past, and venereal histories. Three weeks previous to examination he had observed a small subcutaneous nodule in the skin of the left forearm at the site of a pigmented papilloma. Nodules appeared from then on over the entire surface of the body, except the lower extremities. There were more than 500 tumors counted, from the size of a

filbert to that of an orange. At first the tumors were movable, later they were adherent to surrounding structures, were hard, and had no tendency to ulcerate. No subjective symptoms were present, but there was considerable cachexia, and loss of weight. Blood, urine, and stomach examinations were negative.

Sixteen days later the patient died. There had been considerable dyspnoea and cyanosis present for two days.

At post-mortem tumors were found in the omentum, mesentery, retroperitoneal tissue, beneath the capsule of the liver, in the heart muscle, intestinal wall, and a large mass completely filled the space behind the manubrium. They were all sharply defined, pale, succulent, and translucent.

A complete microscopical description is given of the tumors removed, which in the majority of cases showed typical sarcoma structure.

The origin of these tumors may be primarily in the skin or in the internal organs with metastases into the skin. It is very easy to confuse mycosis fungoides with this condition. The tumors are very numerous as a rule.

The internal tumors in the case cited were found chiefly outside the parenchyma of the internal organs and lymph-vessels. The primary lesion developed from a papilloma in the skin of the elbow. The case was characterized by very rapid development. The first change was noticed in the previously benign papillomata three weeks before admission; death followed in 16 days. P. M. CHASE.

MISCELLANEOUS

CLINICAL ENTITIES — TUMORS, ULCERS, ABSCESES, ETC.

Bulkley, L. D.: Precancerous Conditions. *Interst. M. J.*, 1915, xxii, 730.

The author attributes the increasing prevalence of cancer to the fact that there is some metabolic change existing in the body favoring the transition from the normal growing epithelium into the lawless cancer. Up to the present time cancer has been regarded as a purely local affair and the causes which lead up to the transformation of previously normal tissue have not been fully investigated. The theory of embryonic rests has not fully satisfied the clinical observations that have been recorded. He holds that local irritation cannot account for the persistent malignant action, or other injuries in cancerous cases, because other wounds heal kindly. The death-rate of cancer has risen from 65 per cent in 1900 to 80 per cent in 1913.

He quotes Mayo and Murphy in expressing his pessimism in regard to the cure of cancer in those who are fat with lax tissue, that is, exhibiting evidence of imperfect metabolism. Up to this time little work has been done on the metabolic errors

leading up to cancer. Along this line the author points out that volumetric analysis of the urine of cancerous patients is rarely that of perfect health. There have been errors in nitrogen partition and he quotes Reid of the Cancer Research Laboratory of Manchester, England, as stating that he found an increase in amino-acid nitrogen in practically every case of cancer examined. The author, however, has found this only in well-developed cases. He quotes Blumenthal who states that the oxyproteinic acids are increased in very early cancer independent of the size of the tumor. The author finds the total output of urinary solids is deficient in cancer patients even in the very beginning of the disease. He holds that any variation in the total quantity of solids, the volumetric acidity, the urea, chlorides, phosphates, sulphates, and indican call attention to the possibility of oncoming cancer. He seldom finds a cancer patient with normal excretion from the bowels. In most instances he finds an abnormal constipation with dependence on laxatives. The retention of faeces tends to the formation of enormous bacterial growths whose toxins are absorbed and are an essential element in perverted nutrition of cancer. He thinks that cancer arises from im-

perfect metabolism resulting from some chemico-physiological derangement of the blood stream. In England the yearly consumption of meat has doubled in the past 50 years and the mortality from cancer has increased fourfold. Errors in diet however are only a part of the elements in modern civilization which contribute to the steady increase of cancer. The increase of cancer goes hand in hand with the increase in Bright's disease, and in general may be blamed on modern civilization, principally along the line of erroneous eating and drinking.

In closing he draws attention to the negligence in investigating along suggested lines in order to discover some underlying metabolic cause for the malignant change.

HARRY G. SLOAN.

Bloodgood, J. C.: Cancer Problem. *South M. J.*, 1915, viii, 557.

Bloodgood sounds a series of warnings to the profession in regard to the cancer problem of today, the keynote being "early, thorough examination."

Of the fully developed cancers, 25 per cent have been cured by surgery, and good surgery should promise 100 per cent cures when the carcinoma is still a local growth.

Delay after first warning, or trifling with any treatment but good surgery is gambling with death. The main fault of the profession is that, while the warnings are well known, there is often a lack of courage or ability to present this evidence to the patients in a sufficiently convincing manner to cause them to take immediate action.

In the skin, warts, moles, *nævi*, ulcers, or any area of hypertrophy or destruction may serve as a beginning for cancer. All do not, but no one can determine which, until too late; therefore excision is the safest plan.

All subcutaneous nodules should be considered as possible malignancies, especially in the breast and neck, below the parotid gland.

Menstrual irregularity, discharge between periods, and reappearance after the menopause are suspicious symptoms and should be rigidly investigated at once.

While simple indigestion, slight colic, alternating diarrhoea and constipation may mean nothing serious, yet these may be the first warnings of intestinal malignancy and should be so borne in mind.

In the kidney conditions, while the cases as a rule formerly came early for care, unfortunately, diagnosis and treatment developed late, thus preventing exact study and treatment. This condition has changed, however.

Today, with the X-rays, bone conditions should never escape diagnosis, and sarcoma of the bones should be detected in its incipency.

Unfortunately pain, which is the main stimulus that forces one to early treatment, is lacking, as a rule, in cancer; hence education must take its place.

Surgery, first and all the time, is the only method worthy of consideration, and the only one to show any appreciable results.

PHILLIPS M. CHASE.

Slye, M.: The Influence of Heredity upon the Occurrence of Spontaneous Cancer. *Interst. M. J.*, 1915, xxii, 692.

The author gives a lucid description of extensive experiments tending to prove that carcinoma in mice can be bred into or out of a strain. Cancer, *per se*, is not really inherited, only the tendency of the tissues under a given provocation to produce malignant growths. In collecting human statistics on cancer it must be remembered that the offsprings of two individuals are not merely a compound of these two, but rather belong to the general law of inheritance with possibilities of possessing characteristics of their grandparents. Characteristics possessed by either mate in a union in every instance determine which potentialities any offspring may possess.

Similar human records are well nigh impossible owing to the inability to get accurate ancestral records.

The author's experiments were done on a pedigreed stock of 5,000 mice and her observations extended over a period of eight years.

Cancer structures in mice are identical with those in man and behave in the same way. As to the behavior of characteristics in heredity in mouse breeding she lays down the following general rules:

1. If a pure-bred house-mouse (gray) is crossed with a pure-bred albino (white) the first filial generation will all be gray. If, however, these grays are bred out, three types of mice will result: (1) Pure breeding house-mice (heterozygotes); (2) pure breeding albinos; (3) mixed grays, which if inbred will yield the same three types in about the proportion of one pure gray to one pure albino to two mixed grays.

2. If a pure bred albino is mated with a mixed gray (heterozygote) the immediate offspring will include albinos and heterozygous grays in about equal ratio. These albinos will breed true, and again, the heterozygotes, if inbred, will yield the same three types of mice: pure breeding house-mice, pure breeding albinos, and heterozygous grays.

In testing for the inheritability of any character, it is necessary first, to inbreed individuals who express these characters in themselves. If the character is transmitted through one generation after another to all the offspring, it is proved to be an inheritable one. The mice must be allowed to live until the cancer age of the mouse. The potential may be present in the mouse but the animal may die from some disease before reaching the cancer age, so that the inheritability cannot be determined by inbreeding alone.

For a cross check the author used the hybridization test. If both the individuals that express cancer and those that do not still carry it into the strain with which they are hybridized with the same certainty that albinism is, and if from such hybridizing processes one can extract lines of cancer-

bearing individuals that breed through and in turn carry strains with those in which they are hybridized and also in non-cancer-bearing individuals, the inheritability of cancer is proved beyond a doubt, provided all possible control tests are used at the same time. As controls the author has used the following for years: (1) house-mice and other mice of proved non-tumorous strains when kept in the same cage with cancerous mice. (2) When a cancerous mouse dies, non-tumorous mice are given the soiled cage in which the cancerous mouse died, with all the débris and old food soiled by the dead mouse.

3. The young of carcinomatous mothers are fed and reared by non-tumorous mothers; and the young of non-tumorous mothers are fed and reared by cancerous mothers. The author never had a case of contagion in any of these tests.

4. Over and over again the cancers of mice have been eaten by their mates or by mice placed with them as controls.

5. Portions of the cancer and of the viscera of dead cancerous mice have been fed systematically to mice in control cages. The author never had a case of cancer in such mates or in such controls.

All materials used in the work—cages, boxes, dishes—are kept as nearly as possible sterile. Materials used for cancerous mice are not used for non-cancerous mice. The hands of all workers are sterilized before passing from tumorous to non-tumorous stock.

These contagion tests show that cancer is no more contracted by contact than albinism is, and contagion is therefore ruled out as a factor in the transmission of cancer.

The same principles of inheritance of leukæmia and pseudoleukæmia in mice hold good as in cancer. Leukæmic individuals have transmitted cancer with the same certainty as carcinomatous individuals in the cancer strains and the age incidence of leukæmia is closely parallel with that of carcinoma. The author has never seen a case of leukæmia under eight months. No one has so far been able to infect a mouse with leukæmia.

It is possible by proper breeding to eliminate cancer from a strain. As cancerous ancestry deepens behind a generation the individuals of that generation become more completely cancerous and multiple tumors are more common. The latest product of a highly cancerous stock is full of cancerous growths. In no strain throughout these experiments has cancer ever been bred in where it has not appeared in the progeny, if the mice have lived to cancer age. The results obtained from the author's series of experiments have shown beyond a doubt the tendency to produce neoplasms, under the right provocation, when transmitted from generation to generation with the same inevitableness as the transmission of albinism.

Cancer communities in humans may be explained

on the same principle in breeding as in mice. Inbreeding has nothing to do with the transmission of cancer. Non-cancerous mice have been inbred for 21 generations without the appearance of cancer. Just what is transmitted in cancer cannot be said any more than is known what is transmitted in albinism. All that we can say is that in the germ plasm there resides the potentiality that will eventuate in cancer developing under proper traumatic or chronic irritation. Overirritation in a cancerous mouse of any locality tends to cause a cancer to originate there. Forced breeding and suckling of young in a vigorous female of cancerous ancestry results in a cancer of the mammary tissue and in the mamma most constantly used. The same suckling in the non-cancerous strain produces no cancer. Fighting cancerous mice frequently show neoplastic growths in their wounds received in battle. Irregular teeth or a wound in that region is a constant finding when carcinoma has occurred in the mouth of a mouse. Elimination of the chronic focus of irritation in the author's mice reduced the cancer incidence.

All mice, both cancerous and non-cancerous, were subjected to the same visitation of bedbugs and cockroaches. The vermin did not differentiate between the different strains, but resided with equal familiarity with each.

When cancer is first put into a strain where it has not occurred before, it tends to appear in the form of sarcoma, later in the third and fourth generation becoming carcinoma. In other words the more embryonal tissues yield first to the formless proliferation of cancer, but as the cancer becomes more deeply seated in the strain the more highly differentiated tissues become affected first and carcinoma becomes the predominant form of neoplastic growth.

Inbreeding cancer strains in mice tends to kill off the strain. In the latter generations of markedly cancerous strains animals eventuate whose growth processes tend to run almost wholly to cancer and not to reproduction. The animals of the cancerous strain which show cancer are some of the largest, strongest mice in the strain. Only rarely does a weak mouse develop the cancer. The decrease in food to the point which produces emaciation lowers the cancer rate in the strain, but it increases the number of deaths from common infection. It also lowers the rate of reproduction, therefore it lowers the tumor growth and the normal growth. The tumor appearing in the individual whose normal growth processes are poor is also of small growth. The small growth in old individuals also supports this theory. The presence of a tapeworm in the cancerous mouse retards the growth of the tumor by withdrawing the food supply. Constant reproduction in cancerous females in the prime of life in every instance has retarded tumor growth. When a strong cancerous female is not reproductive her tumor grows with great rapidity. Infection takes the weak individuals, cancer selects the

strong ones. A very slight infection would kill a pregnant female, but a tumor is retarded by pregnancy. Infections are easily spread and are highly contagious, but not in a single case was cancer transmitted by contact. Infection is a disease of early life, cancer of middle and advanced age when the normal growth processes are confined to regeneration and reproduction.

In conclusion, the author questions the possibility of proving cancer an infection. It can be bred into and out of strains at will, and follows the laws of heredity with an inevitableness which makes it a character that can be manipulated. Cancer is not transmitted as such, but rather as a tendency to occur from a given provocation, in some form of overirritation. The author suggests the elimination as far as possible of causes of the irritation, and a eugenic control of matings in order to eventuate a considerable decrease in the frequency of cancer.

HARRY G. SLOAN.

Wood, F. C.: Cancer: What We Know About It and What We Can Do For It. *Ohio St. M. J.*, 1915, xi, 425.

The existence of cancer has been recognized from the earliest times, the first recorded observations going back to 2000 B. C. The early methods of treatment were much the same as those now employed, the Egyptians using caustics containing arsenic and other metals. Even as early as Roman times operations for cancer of the breast were described and probably performed. In 1606 Fabricius gave the first detailed account of an operation for carcinoma of the breast; removal of the axillary nodes being recommended as the first stage, to be followed by excision of the entire gland.

With the invention of the microscope in the early part of the nineteenth century there began a fresh period of study which has led to many important conclusions, both as to diagnosis and prognosis; but the limitations of this method have been reached and further advances must be made by experimental observations. This does not mean that valuable information can not still be obtained by the collection of series of cases, well observed and accurately diagnosed, in order to learn the biology of human cancer. We know little enough at the present time about the prognosis of the various types of cancer, and only by study on human beings can these obscurities be elucidated. For the past twenty years the experimental method has been employed, and many interesting facts have been discovered. Heredity, even in animals, has been shown to be an unimportant factor in the production of carcinoma, the most intense inbreeding only doubling the percentage of incidence in certain strains of mice. These results can not be applied to human beings, since inbreeding in man is never as close as it can be in animals.

The experimental method has shown that an animal bearing a primary tumor is extremely sus-

ceptible to inoculation with its own tumor and resistant to inoculation with tumor material from other animals. The same phenomenon has unfortunately been observed in man, for in treating patients with vaccine made from tumor-cells, as has recently been recommended, cases of inoculation carcinoma have been produced. This danger should have been recognized, for every metastasis is really an inoculation into the body of the host of the original tumor. This point emphasizes the necessity of avoiding the handling and manipulation of tumors in any way before operation, and also of avoiding all unnecessary manipulations during operation, as otherwise particles of tumor may be distributed through the vessels.

No immunity can be produced to a growing tumor, although experimentally it has been possible to immunize against transplanted tumors before inoculation—an entirely different thing. No therapeutic agent has been discovered which in the slightest degree influences primary carcinoma in animals. It is impossible to cure such a tumor, which corresponds exactly to that appearing in human beings, by radium or X-ray, although metastatic nodules can be cured in animals just as in man, by radium.

None of the so-called cancer cures or treatments, of either vegetable or animal nature, has been shown to be of the slightest value in the cure of primary tumors of animals, or, consequently, of human beings. Such cures as are reported are merely evidence of incorrect diagnosis or of the spontaneous disappearance of tumors, which occurs not only in mice, but also in man.

The only known way to effectively treat a cancer at the present time is to make an early diagnosis and remove the growth by surgical procedures. Although certain of the non-malignant or very slightly malignant growths, such as epulides and basal-celled epitheliomata of the face, have been cured by liquid air, radium, X-rays, or caustics, the application of these substances should be limited to tumors which cannot be removed by operation; in other words, every removable tumor should be operated on as soon as its nature is determined.

Klein, G.: Combined Treatment of Carcinoma with Mesothorium, Röntgen Rays, and Intravenous Injection (Kombinierte Carcinombehandlung mit Mesothorium, Röntgenstrahlen, und intravenösen Injektionen). *Beitr. z. klin. Chir.*, 1915, xcv, 593.

Klein has used his method of actinotherapy in 47 cases of gynecological carcinoma and in 32 surgical carcinomata. The results were not very satisfactory in internal carcinomata, but in those of the lips, face, and breast the results were excellent. He describes one particularly striking case of cancer of the breast that had recurred several times. All cancer nodules disappeared after his treatment, and there has been no recurrence, now more than 3 years later.

His technique is as follows: Mesothorium is applied for some days for intervals of 2, 3, or 12 hours, depending on the size and location of the carcinoma. During this time two intravenous injections are made, in some cases of borcholin, in others of radium-barium selenate. He thinks the latter preparation is the most effective. The dosage and duration of irradiation must be closely watched and varied to suit the individual case. Between each series of two mesothorium treatments intensive röntgen treatment is given. Only medium doses of mesothorium are used, 50 to 100 mg. Bumm at first used too large doses and produced necrosis of neighboring tissues and in some cases even death. On the contrary very high doses of filtered röntgen rays are given. The rays are more effective if given over a few large fields than over many small ones.

A. Goss.

Schepelmann, E.: Trauma and New-Growths (Trauma und Gewächse). *Med. Klin.*, Berl., 1915, xi, 741.

No one has succeeded in proving experimentally that trauma produces new-growths. Clinical experience seems to show, however, that continued mechanical irritation is a factor in their production, as evidenced in breast cancer from irritation by corset stays, cancer of the cheek from jagged teeth, cancer of the lips in pipe-smokers, etc. In spite of these facts, however, it seems that not more than 2 per cent of new-growths show a history of preceding trauma. Lubarsch says that not a single authentic case has been reported in which a single trauma gave rise to a malignant new-growth. In many of the cases reported it is probable that the injury only revealed the presence of a tumor that already existed. It is well known that tumors may grow to quite a large size without causing any symptoms. Moreover, the regions that are most exposed to injury, as the fingers, elbows, and legs, show the smallest number of cancers. There is no possibility of a neoplasm having been caused by an injury if the interval between the accident and the development of the tumor is more than three or four weeks.

Though single traumas do not cause cancers, they may hasten their development. Bruising a tumor may cause hæmorrhage and necrosis, which lead to changes in metabolism and hasten development. Lubarsch thinks, however, that even this is unusual and he will not admit that tumor growth has been hastened by an injury unless histological examination shows traces of injury in the tumor tissue, such as hæmorrhage and necrosis, and signs of accelerated growth. But it is not unusual for a single injury to give rise to metastases. The injury of the primary tumor may cause cancer-cells to break into the blood or lymph-vessels and be carried through the body or to the neighboring lymph-glands. They are particularly liable to lodge and develop in the more vascular regions, such as the bone-marrow and liver. It is not

known whether trauma is capable of changing a benign into a malignant tumor, but if Cohnheim's theory is true that all tumors are benign at first and only become malignant from the removal of inhibiting influences, this would seem very probable. Rupture of cystic tumors and hæmorrhage or torsion of the pedicle of new-growths may be caused by trauma.

A. Goss.

Nicoll, M., Jr.: Intraspinal Administration of Antitoxin in Tetanus. *J. Am. M. Ass.*, 1915, lxiv, 1982.

The results obtained in this series of cases, taken indiscriminately and regardless of clinical conditions, with the low death-rate of 20 per cent, Nicoll claims is due largely to the intraspinal dosage. He recommends the following method of administration:

1. Using 3,000 to 5,000 units an injection is made into the lumbar region of the spinal canal, preferably under an anæsthetic, the volume of the fluid being brought up to 10 to 15 cubic centimeters by the addition of sterile normal saline, the exact amount being regulated according to the age of the patient and the amount of spinal fluid withdrawn.

2. Ten thousand units are used intravenously at the same time.

3. The intraspinal dose is repeated in twenty-four hours.

4. A subcutaneous dose of 10,000 units is given three or four days later.

Nicoll strongly urges the adoption of the well recognized adjuvants to specific treatment, as quiet, subdued light, sedatives, etc.

The histories of the 20 cases treated by this method show that the period of incubation ranged from 7 to 11 days; in 4 of the cases this period was undeterminable. In each case the serum was given intraspinally and, when the symptoms indicated, was repeated in 24 hours. It is interesting to note that in one case, a male, period of incubation 14 days, after 5,000 units had been given intraspinally and 10,000 units intravenously, there developed marked anaphylaxis, with general urticaria and oedema of the glottis and lungs. This, however, passed away after the administration of epinephrin. Forty-eight hours afterward the intraspinal dose was repeated with less reaction. This patient is among the cured. The four fatal cases died suddenly, probably due to a short incubation and the long delay in beginning the treatment. One developed tetanus after a herniotomy, and though he was able to take fluids by mouth, and the convulsions had ceased, he died from pulmonary oedema.

Nicoll believes that without doubt a few of these cases would undoubtedly have recovered if the intraspinal injection had not been given, but the results obtained are so much more favorable than when large doses are used by the intravenous and intramuscular methods that he cannot help but claim better results from this method.

L. B. CRAWFORD.

Kempf, F.: Treatment of Tetanus by Endoneural Injection of Antitetanus Serum and Drainage of the Nerve (Die Behandlung des Tetanus mit endoneuraler Seruminjektion und Nervendrainage). *Arch. f. klin. Chir.*, 1915, cvi, 769.

Kempf thinks tetanus can be treated much more effectively than it is at present by injecting the antitoxin directly into the nerve-trunks. He describes two cases in which he has used this method. They were quite severe cases with pronounced trismus, difficulty in swallowing, stiffening of the muscles, and attacks of dyspnoea. The incubation period was 18 to 20 days, but he is not convinced that the prognosis is dependent on the length of the incubation period. The injections should be made into the nerve-trunks of the motor nerve of the limb affected, in his case the nerves of the axilla. In wounds of the head the trifacial and facial should be injected, and in wounds of the trunk any anatomical atlas will show what nerves supply the region.

The endoneural injection blocks the nerve for any toxin that may be produced later and also sends antitoxin to the motor centers in the medulla to overcome the toxin that is already anchored there. Endoneural injection, he thinks is both less dangerous and more effective than subdural injection. The injection needle is pushed into the nerve-trunk toward the center and the fluid emptied by slight pressure. The nerve distends and the distention subsides as the serum is taken up by the nerve, leaving very little at the site of injection. The eye can follow the progress of the antitoxin upward in the nerve.

In Kempf's second case, in order to strengthen the effect of the injection, he drained the nerve, the object being to drain the toxin from the body. He used metal tubes fastened with catgut into a longitudinal slit in the nerve. It would be better to use tubes bent at right angles, one arm being inserted into the nerve, the other projecting out of the wound. The tubes should be of soft metal so they can be bent at any desired point, and they should be almost as large in diameter as the nerve, so there will be no danger of their being occluded.

In cases where the above method fails he proposes to cut the motor nerves of the region and sew the ends into the skin wound. In this way the toxin that is formed will be discharged from the peripheral end, and injections of serum can be made into the central end. It is worth while to risk the resulting paralysis for the sake of saving the patient's life, and the nerves can be sutured together again after the patient is well and motion restored.

Experimental work has been done showing that animals in whom tetanus toxin has been injected do not have convulsions if the motor nerves have been cut previously. At least 200 ccm. of antitoxin should be injected. The injection should be made slowly and when one nerve becomes very much distended the needle should be changed until

the distention subsides. His injections were made under general anæsthesia, and both patients recovered. A. Goss.

SERA, VACCINES, AND FERMENTS

Burnham, A. C.: Tuberculin in Surgical Tuberculosis, with Special Reference to the Use of Sensitized Bacillary Emulsion. *J. Am. M. Ass.*, 1915, lkv, 146.

Burnham shows the value of sensitized bacillary emulsion of tubercle bacilli in both localized and pulmonary tuberculosis. The emulsion is prepared by growing tubercle bacilli in an antituberculous serum, and then washing the bacilli to remove the excess of serum, after which the bacilli are prepared in an emulsion, 1 ccm. containing the equivalent of 5 mg. of dried bacilli. Burnham begins with very small doses (about one millionth of a ccm. or less), increasing very slowly, and administering every 5 to 8 days. Of 14 cases of surgical tuberculosis treated, 4 showed marked improvement, 6 showed fair improvement, 3 showed no change, and one grew worse.

Of 16 cases of pulmonary tuberculosis treated, 3 showed marked improvement, 4 showed fair improvement, 4 showed no change, and 5 grew worse.

Burnham concludes that the sensitized tuberculin has the same clinical action as the ordinary emulsion and that the best results follow the use of small doses administered not oftener than every 5 days. R. G. PACKARD.

Feldner, J.: Diagnostic Value of Urobilinuria in Surgery (Die diagnostische Bedeutung der Urobilinurie für die Chirurgie). *Zentralbl. f. d. Grenzgeb. d. Med. u. Chir.*, 1915, xix, 163.

Surgeons have heretofore paid little attention to urobilinuria as a means of diagnosis, but it is really of great importance in a number of surgical conditions. Urobilin originates from bilirubin which is a product of disintegration of red blood-cells. Urobilin is formed by the action of reducing bacteria, the reduction taking place in the intestine under normal conditions, and in pathological cases in the liver. The urobilin formed in the intestines is carried by the portal vein to the liver where it is passed along in the form of bilirubin if the liver is competent; the appearance of urobilin in the urine indicates a relative insufficiency of the liver. Therefore urobilinuria may indicate one of three things: there is excessive bacterial action either in the intestines or bile passages; there is increased hæmolytic to such an extent that the liver cannot handle all of the material and relative insufficiency results; or there is disease of the liver, preventing it from taking care of even the normal amount of urobilin.

If the hepatic or common bile-duct is completely obstructed, icterus appears and there is bilirubin in the urine, showing that the bile is backed up into the blood, but there is no urobilin in the urine be-

cause no bile gets into the intestines. As soon as the stone passes on the bile rushes into the intestine and there is so much urobilin that the liver cannot take care of it and it appears in the urine. This alternation of positive and negative urobilin findings is valuable in making a differential diagnosis between obstruction by bile-stones and by malignant new-growths. Stones in the gall-bladder do not in themselves cause urobilinuria, but if there is bacterial inflammation there is pronounced urobilinuria as the results of a septic process in the liver which leads to reduction of the bilirubin within the liver. Thus urobilinuria may give warning of beginning infection of the bile tract in general infections such as typhoid, where the symptoms of cholecystitis are masked by the typhoid. Urobilinuria is also of value in making a diagnosis of malignant metastasis in the liver; the conditions with which it is apt to be confused—gastric ulcer and cancer—do not produce urobilinuria, while involvement of the liver does. Cirrhosis and other diseases of the liver also cause urobilinuria. Fever in itself does not cause urobilinuria, but it is apt to be present in febrile cases, because of hepatitis caused by the bacteria producing the infection. In cases where urobilinuria is present it is best not to give chloroform as an anæsthetic, as it is well known that chloroform is very toxic for the liver-cells.

Urobilinuria is particularly important in anæmic conditions. Its presence shows that the anæmia is due to excessive hæmolysis and that therefore splenectomy is indicated. In chlorosis there is not a trace of urobilinuria for there is too little blood formed; but in the hæmolytic anæmias, such as pernicious anæmia, it is present and indicates operation. Urobilinuria is particularly intense in hæmolytic cirrhosis, for in this condition there is not only increased destruction of red cells but also a process of destruction going on in the liver parenchyma. Removal of the spleen puts a stop to both these processes. In cases of catarrhal jaundice accompanied by urobilinuria acute yellow atrophy is threatened. Eppinger reports a case in which some of the signs of the latter condition had developed, but which was saved by early splenectomy. In cases of acute insufficiency of the liver, such as that due to phosphorus poisoning, the liver-cells are destroyed so completely that no bile is produced and consequently there is no urobilinuria. In cases of tumors of the upper abdomen an examination for urobilinuria will show whether the spleen-liver circle is involved and therefore whether splenectomy is indicated.

Of course urobilinuria is so frequent that no far reaching conclusions can be drawn from it alone, but in conjunction with other symptoms such as jaundice or abdominal tumor it becomes instructive. The aldehyde test for urobilinuria is so simple and easy that surgeons can easily apply it, and in important cases it can be confirmed by the fluorescent test. Still finer points in diagnosis can be

settled by examination of the duodenal contents for bile pigments by means of Einhorn's duodenal tube. In this way urobilinuria due to polycholia can be distinguished from that due to cholangitis. A. Goss.

BLOOD

Stewart, G. N.: A Study of Inequalities in the Blood Flow in the Two Hands (or Feet) Due to Mechanical Causes, etc. *J. Exp. Med.*, 1915, xxii, 1.

In a careful and painstaking study of this subject Stewart has determined that in cases in which great inequalities in the blood flow in the two hands were produced by mechanical causes—ligation or compression of vessels, embolism—the stability of the ratio of the flows, in successive measurements at short intervals, was found to be characteristic. Over long intervals the opening up of collateral circulation or the progressive increase of the block—in a case of multiple embolism with thrombosis—was followed by changes in the ratio of the blood flow in the normal and the affected part. Another criterion of these conditions was found to be that the inequality was not abolished by producing general vasomotor changes; e.g., by altering the external temperature.

Also, in certain cases inequalities in the blood flow in the two hands or feet were found which were not stable from day to day, and which could be abolished, reduced, increased, or reversed by alterations in the external conditions which bring about general vasomotor changes. These inequalities, not associated with clinically recognizable differences between the parts compared, were interpreted as due to unequal activity of the vasomotor mechanism on the two sides. The condition appeared to be most frequent in certain groups of neurological cases.

GEORGE E. BEILBY.

Hess, A. T.: The Blood and the Blood-Vessels in Hæmophilia and Other Hæmorrhagic Diseases. *Bull. Johns Hopkins Hosp.*, 1915, xxvi, 264.

The author states that it is impossible at the present time to classify the hæmorrhagic diseases. However he recognizes two main groups, hæmophilia and purpura. By hæmophilia is meant the type of disease which is characterized by its hereditary nature and by the fact that it is transmitted almost always to the male, the female showing no manifestations of the disease. Clinically, its main criterion is the great delay in the coagulation of the blood. The purpuras, on the other hand, show an almost normal coagulation time of the blood, and the condition occurs in females as frequently as in males. This group is characterized by a diminished number of the blood platelets, which are normal in hæmophilia; by an increase in the bleeding time; by the occurrence of hæmorrhage at the site of subcutaneous puncture; by the appearance of many small petechial

spots; and by the freedom of the joints from hæmorrhagic involvement. In addition to these signs, Hess describes what may be termed the capillary resistance test, which is chiefly present in the purpuric conditions and has been found to be absent in hæmophilia. By this is meant the phenomenon of the appearance of petechial spots on the forearm following the application of a tourniquet for a definite period to the upper arm; in other words, after subjection of the vessel walls to the increase in pressure.

Hess states that the defect leading to hæmophilia is not definitely known. It has been generally determined that there is no deficiency of calcium, although in some instances a definite deficiency of calcium was established. This was determined by means of the calcium estimations of the blood, by the hastening of coagulation following the addition of minimal amounts of calcium to the blood (a procedure which delays or does not hasten the coagulation of normal blood), and by metabolism studies.

From a clinical standpoint the author thinks that too much stress is at present being laid upon the coagulation time of the blood and even from blood obtained not directly from the blood-vessels and that operations are undertaken if the clotting time is reported as normal. This leads to serious or fatal consequences. It is far more important from this point of view to ascertain the number of platelets, the bleeding time, and the appearance or absence of hæmorrhage following subcutaneous puncture.

GEORGE E. BEILBY.

Lewisohn, R.: Blood Transfusion by the Citrate Method. *Surg., Gynec. & Obst.*, 1915, xxi, 37.

This work was begun with the object of simplifying the technique of blood transfusion. The method of vessel-anastomosis and the syringe method are too complicated for general use. The object of this work was to find an atoxic anticoagulant which would prevent the blood from clotting during the transfer from donor to recipient. From a series of animal experiments the following facts were elucidated:

1. Sodium citrate mixed with blood in the ratio of 0.2 per cent will prevent the blood from clotting for two to three days.

2. The coagulation time of the recipient's blood, tested after the transfusion of citrated blood, is shortened. After a few hours the coagulation time again becomes normal.

3. Sodium citrate is only conditionally atoxic. Animal experiments show that if 1 per cent instead of 0.2 per cent citrate is present in the blood, transfusions of large amounts of citrated blood are fatal.

The author gives detailed reports of 22 blood transfusions performed by his method. The largest amount transfused at one time was 1,000 ccm. In one case 1,600 ccm. were given to a patient within twenty-four hours.

No untoward symptoms occurred in any of the cases. Some cases showed a moderate polyuria—caused by the introduction of the citrate. There were no macroscopical or microscopical changes in the urine. The technique is extremely simple. The donor's vein is punctured and the blood collected in a glass jar and mixed with a 2 per cent sterilized solution of sodium citrate in the ratio of 1:10. The recipient's vein is then either punctured or exposed and the citrated blood is introduced through a salvarsan flask or an ordinary glass funnel. Hæmoglobin tests taken a few days after the transfusion show that the citrated blood is clinically as valuable as unmixed blood. Even hæmorrhagic conditions are no contra-indication against the use of this method, as the coagulation time of the recipient's blood is shortened after the transfusion of citrated blood.

The new method offers the following advantages as compared with the older methods:

1. The citrate method is technically as easy as an ordinary saline infusion, therefore it does not require any special technical skill.

2. Donor and recipient are not in the same room, which lessens the psychical shock for the patient. Furthermore it eliminates the risk of infecting the donor in cases of sepsis.

Ottenberg, R., and Libman, E.: Blood Transfusion: Indications; Results; General Management. *Am. J. M. Sc.*, 1915, cl, 36.

Blood transfusion, until recently, was expected to be a cure-all, and was tried in almost every kind of desperate condition. As the result of a large amount of work done since Crile's introduction of a successful technique for direct blood transfusion, the real indications for transfusion have become better understood and more sharply defined.

Crile's statement of the indications have for the most part remained valid, but subsequent experience has altered the authors' views in regard to many of them. In particular the indications for transfusion have been extended by two facts: transfusion has become safe, and transfusion has become a much less serious procedure for both patient and donor.

In the present paper the authors have made a clinical study of 212 blood transfusions in 189 cases which they have had the opportunity of observing either in the hospital or in private practice. These transfusions were done by a number of different surgeons, and for a great variety of different conditions.

There were 42 cases in which transfusion saved life. Of these, 29 subsequently recovered entirely and were discharged well or have continued under observation up to the present time; 13 were saved from immediate death but have continued to suffer from some chronic condition which could not have been cured by transfusion, such as pernicious anæmia, leukæmia, etc. These cases fall under four main headings: (1) acute anæmia from hæmorrhage, (2) hæmorrhagic diathesis, whether

hereditary or acquired, (3) grave chronic anæmias, and (4) poisoning.

Of cases cured or greatly benefited, not in a desperate condition at the time of transfusion, there were 43 in which transfusion was not an emergency measure but was performed on patients whose general condition had been seriously impaired by chronic disease. Most of these patients ultimately made complete recoveries, others continued to suffer from chronic illness. In all there was great improvement following the transfusion.

Of the 189 transfusion cases, 85, 45 per cent, were successful in that the condition of the patient was greatly improved, and 42 of these transfusions, 22 per cent, were life-saving.

There were altogether 104 cases in which transfusion did no good or in which the continuation of the original disease caused death.

1. The first was a group of 28 cases which improved for a short time but died subsequently from continuation of the original disease. These cases included a considerable variety of diseases, chief among which were malignant tumors, pernicious anæmia, subacute streptococcus endocarditis, dysentery, typhoid fever, and pyogenic infections. These were all cases which lived from several days to one and a half years after transfusion.

2. The second group of the cases which died consisted of 23 cases of some disease of itself so grave that transfusion could not have been expected to do much good, and was only resorted to as a desperate measure. These included 3 cases of acute lymphatic leukæmia, 1 case of typhoid perforation, 1 case of brain tumor, 3 cases of diabetic coma, 1 case of uræmia, and 1 case of hæmorrhagic diphtheria.

3. The third group of fatal cases consisted of 23 patients in whom transfusion might have been expected to be beneficial, but actually did little or no good. Of these the most disappointing were 4 cases of post-operative shock and 6 cases of pathological hæmorrhage, including 4 of cholæmia and 2 of purpura hæmorrhagica. In these cases, contrary to expectation, the hæmorrhages were not influenced by transfusion. There were also 3 cases of hæmorrhage in typhoid fever.

Finally, there were 2 cases—1 of pernicious anæmia and 1 of subacute streptococcus endocarditis—in which the unfavorable outcome was hastened by transfusion of excessive amounts of blood, and 3 cases in which the fatal result was probably due to transfusion of incompatible—agglutinative and hæmolytic—blood.

As to special indications, there were 14 cases of gastric or duodenal ulcer. Almost all of these were in a desperate condition at the time the transfusion was done. Of the 14 cases 12 recovered. The 2 deaths occurred not from a continuance of the hæmorrhage but from peritonitis and other complications following laparotomy. It is a striking fact that in almost all the cases of gastric or duodenal ulcer the hæmorrhages stopped after transfusion.

The cases in which transfusion seems actually to check hæmorrhage are those of repeated or prolonged bleeding.

There were 6 cases of severe dysentery. These patients were all profoundly anæmic, due not only to hæmorrhage, but to nutritional disturbance. In all the cases the immediate results of the transfusions were very good, but in 4 of the 6 cases the intestinal disturbance continued and the patients ultimately died. In severe dysentery, then, transfusion is worth trying as a temporizing measure.

There were 9 transfusions in 7 cases of typhoid fever. Of the 7 patients, all in the most desperate possible condition, 2 ultimately recovered. As the two patients who recovered would in all probability have died without transfusion, it is undoubtedly a useful method in the treatment of severe typhoid fever. In the presence of exceedingly large hæmorrhages it can have, of course, only a temporary stimulating value. In cases of protracted or repeated hæmorrhage it not only replaces the lost blood, but may help to check the hæmorrhage. In all typhoid cases the first appearance of blood in the stools should be an indication to make preparations so that a transfusion can be done, if needed, on very short notice.

There were 3 cases of ectopic pregnancy and in all the transfusion was life-saving. One was an emergency case, an almost exsanguinated patient, and a transfusion was done immediately after the operation. Another had been operated upon, but two days after the operation she was doing badly and a large transfusion was done. The third was a case which bled slowly and in which the diagnosis was at first uncertain. A transfusion raised the hæmoglobin from 25 to 50 per cent and a successful laparotomy was performed two days later.

Among the most satisfactory transfusions in the whole series were some of those done preliminary to operation upon patients whose desperate condition would otherwise have contra-indicated any operation. There were 33 such pre-operative transfusions and in 13 of them the result was decisive and the patients recovered. Three died of operative shock, and their experiences have not led the authors to believe that transfusion has any specific effect in preventing shock further than its effect in restoring to the patient more or less of his original power of resistance.

There were 5 transfusions for hæmorrhage after operation. In 3 of the cases there were brilliant recoveries, in 2 deaths. In the 2 fatal cases—nephrotomy and operation for malunion of fractured femur—shock probably played almost as large a rôle as hæmorrhage.

There were 7 transfusions for post-operative shock. All the patients died from within an hour to five days, and it seems probable that transfusion is not to be relied upon clinically as a remedy for pure shock. It is possible that if the condition of shock could have been foreseen and transfusion done immediately after the operation instead of

after many hours of delay the results might have been better.

There were 12 transfusions in 9 cases of severe purpura. Of these, 2 died, uninfluenced except as to temporary replenishment of blood, 6 recovered completely, and 1 left the hospital improved. More striking than the statistics was the prompt cessation of hæmorrhage in most of the cases. The 2 fatal cases form a peculiar group, because they were both cases of post-partum purpura hæmorrhagica. In both cases the hæmorrhages were entirely uninfluenced.

There were 6 transfusions in 5 hæmophilia cases. In all but 1 the transfusion was only done after protracted hæmorrhage had failed to yield to all other kinds of treatment, including serum treatment. In 5 of the 6 transfusions the hæmorrhage was checked promptly and the patients regained their health. In the 2 cases that could be followed for some time the tendency to hæmorrhage reappeared after weeks or months.

Every individual known to have hæmophilia should have at his command several persons whose blood by previous tests is known to be compatible with his, and who are willing, when called upon, to give blood for transfusion.

The prophylactic effect of small transfusions, 25 to 50 ccm., repeated at long intervals of one to three months would be well worth trying. The authors compare the serum treatment with transfusion and reach the conclusion that it is of little value in cases of hæmorrhage, except when used locally. Nevertheless, on account of the favorable reports of others, and particularly on account of the successes reported in hæmorrhagic disease of the newborn—a condition with which the authors say they have had little experience—they believe that serum treatment deserves a further clinical trial.

There were 18 cases in which hæmorrhage followed some other condition: 3 secondary to infections, 5 to leukæmia, 1 to pernicious anæmia, 8 to cholæmia or prolonged jaundice, 1 to nephritis. In hæmorrhages secondary to infections transfusion may check the hæmorrhage, but the ultimate result will depend upon whether the body overcomes the infection.

There were 4 cases of lymphatic leukæmia in which the indication for transfusion was hæmorrhage from the mucous membranes. In 3 of these cases the leukæmia was acute and the hæmorrhages were uninfluenced by transfusion. In the fourth case the leukæmia was of the chronic type, and the hæmorrhages, which had not been so severe as in the other 3 cases, stopped after transfusion.

The case of pernicious anæmia was one in which the hæmorrhagic tendency only appeared when the leucopenia became marked—between 950 and 3,000 leukocytes per cubic millimeter. Transfusion had little effect.

There were 13 transfusions in 12 cases of pro-

longed obstructive jaundice. Of these cases 4 were transfused preliminary to operation to prevent hæmorrhage, 7 were transfused for persistent hæmorrhage after operation, and 1 was transfused simply to improve the general condition. The results were disappointing. In the 25 definite cases of pernicious anæmia there were no cures; 14 of them underwent more or less prolonged remissions immediately following transfusion, while 11 of them showed little or no effect.

Transfusion then so far as the authors' experience goes, is never curative in pernicious anæmia. It is a symptomatic remedy which with greater certainty than any other known remedy overcomes the chief symptom of the disease—anæmia. But it does more than this; in about half the cases it initiates a remission. It is true that remissions occur even in the most desperate-appearing cases without transfusion. But the promptness with which the remission occurred in 14 of the cases leaves no doubt that the transfusion stimulated the remission. In two of the authors' cases in which a first transfusion failed to produce a remission a second transfusion from a different donor did.

There were transfusions in 10 cases of leukæmia, 9 of the lymphatic, 1 of the myeloid type. Four of the cases were of the acute variety, with large lymphocytes predominating. In 3 of these the transfusions were without effect and the patients died in a few days. In the fourth the patient's life was probably prolonged for three months by two transfusions. In these cases there were no significant changes in the blood-picture following transfusion. The authors report transfusions in 10 cases of infection with pyogenic organisms and in 4 cases of subacute streptococcus endocarditis. All the cases were in the most desperate possible condition at the time of transfusion, and the 4 that recovered probably owe their recovery to the transfusion. In prolonged infection, due attention having been paid to surgical needs, the transfusion of normal blood may be extremely valuable and should not be too long delayed. In acute infections the value of transfusion should be determined by more extensive studies than have hitherto been made.

In severe intoxications transfusion would seem to be indicated only if a considerable part of the poison is contained in or has acted on the blood. Among poisons which act in this way are carbon monoxide, hydrocyanic acid, benzol, nitrobenzol, and possibly carbolic acid. In such cases, of course, a large phlebotomy must be done before or during the transfusion. In illuminating gas poisoning, transfusion is now accepted as the best treatment. Four cases of diabetes were transfused. Transfusion had no effect on diabetic coma or on the course of severe diabetes.

In no case in which hæmolysis or agglutination did not occur in the test-tube were any untoward symptoms observed which could be attributed to these phenomena. The authors feel absolute

confidence that if the tests have been carefully done nothing whatever need be feared from this source. The amount of blood to be transfused should be decided on before each transfusion. Before the transfusion it is wise in every instance to have the donor sign a legal form, relieving the patient and the surgeon from further liability, and stating the amount of money that he is to receive. The technique of transfusion is discussed. The authors believe that the syringe method, as practiced by Lindeman, possesses great advantages over other methods.

There are probably many conditions in which repeated transfusions would accomplish a great deal more than a single large transfusion, or in which the repetition of transfusions might become necessary at later stages of the disease. Some such conditions are pernicious anæmia, hæmophilia, and infections, whether local or general. There is no danger in repeated transfusions provided the tests for hæmolytic and agglutination are carefully done.

EDWARD L. CORNELL.

BLOOD AND LYMPH VESSELS

Bonin, G. von: Gunshot Aneurisms and Their Treatment (Aneurysmen durch Schussverletzungen und ihre Behandlung). *Beitr. z. klin. Chir.*, 1915, xcvi, 146.

The author gives the histories of 12 cases of aneurism in which he sutured the vessels. One was a lateral suture of the brachial, the others were circular sutures of the common carotid, axillary, femoral, and popliteal. In six of the cases it was necessary to implant segments of a vein. This can be done safely if the patient's own vein is used. Generally a segment of the saphenous vein is used, and on account of the valves it should be reversed in position so that the blood runs through it in the same direction as before.

Von Bonin thinks that suture of the vessel is the method of choice in uninfected aneurisms if the conditions are such that the operation can be performed aseptically. In five cases he ligated the vessels because the aneurisms were infected. There were no circulatory disturbances after any of his cases of vessel suture. Recovery was uneventful in 11 of the cases, without any infection or secondary hæmorrhage. The only unsuccessful case was one of suture of the carotid, in which there was late infection from a fragment of shell that was not found and removed. A table is given showing the results of various authors with vessel suture.

The best time for operating on these aneurisms is from the third to the fifth week after the injury. The external wound should be healed, but the operation should not be delayed until a connective-tissue sac has been formed and until adhesions have developed that make it difficult to dissect the vessels away from the surrounding tissues and nerves.

A. Goss.

Hotz, G.: Surgery of the Blood-Vessels (*Zur Chirurgie der Blutgefäße*). *Beitr. z. klin. Chir.*, 1915, xcvi, 177.

Hotz worked in one of the home hospitals and discusses the later results of the treatment of vessel injuries at the front. He has seldom seen uneventful recovery after ligation of the blood-vessels at the front. Among 6 cases of ligation of the carotid, for instance, there was unilateral paralysis in 5, from which the patients have not recovered. Among 6 ligatures of the femoral, popliteal, and axillary, there was gangrene in 4. Among the ligations performed in the home hospitals he has seen no cases of gangrene. This is due to the fact that the soldiers have recovered from the shock of the injury and the fatigue of the campaign, and their circulation and general condition is much better. In view of these bad results of ligation at the front, he suggests that it might be better to suture the vessels.

Capillary hæmorrhages are frequent in old septic wounds, where the patients have had a high fever for a long time. The granulating surfaces of such wounds should be kept dry, and the open wounds subjected to sunlight or artificial light treatment. If there is late arterial hæmorrhage from progressive infection the wound should be opened up and the vessel ligated.

One of the most frequent late results of vessel injuries is aneurism. Arteriovenous aneurisms are much more frequent than purely arterial ones—13 to 4. In the early stages of arteriovenous aneurism there is often no sac; only an open communication between the artery and vein. They may remain stationary for weeks and produce practically no symptoms, so that some surgeons have advised against operating for them; but eventually they practically all grow worse and cause serious symptoms, either from increase in size of the tumor or from involvement of nerves, and Hotz has never seen satisfactory results from conservative treatment. If there is only a small slit in the vessel wall lateral suture is the best method of treatment, even if it decreases the lumen of the vessel as much as one-third. If there is infection, ligation of the vessel inside the sac is the simplest and best method of treatment. Gangrene of the extremity after ligation for aneurism is unusual if sufficient time has elapsed for the formation of a collateral circulation, but on account of rapid growth of the tumor and the severity of its secondary effects operation cannot always be delayed so long.

In testing for the sufficiency of the circulation it must be remembered that it must be strong enough to supply the limb not only when at rest but when it is working. Surgeons sometimes forget that considerable greater force is required to meet the latter condition.

Hotz has sutured the vessels in 7 cases of aneurism and implanted segments of veins in 5. In one case he had to ligate later on account of secondary hæmorrhage; all the other 11 healed uneventfully.

with good function and adequate circulation. He ligated a number of infected cases, without gangrene in any case, but in several with more or less pronounced circulatory disturbances. The conditions are not favorable for early operation, both because the collateral circulation is not established and because of effusion of blood in the tissues. There is a better collateral circulation in regions where large masses of muscles have to be provided for, than in regions where chiefly ligaments and tendons are to be supplied. He illustrates this by a discussion of the anatomical conditions at the knee- and elbow-joints and states that this accounts for the high percentage of necrosis after ligation of the popliteal.

A. Goss.

Reder, F. R.: The Treatment of Angiomata by the Injection of Boiling Water (Wyeth Method).
Surg., Gynec. & Obst., 1915, xxi, 61.

The author states that from statistics it must be inferred that the face is the favorite site of these neoplasms, two-thirds of them being located there. The brow and the cheek seem to be most commonly affected. Next in frequency come the lips, the nose, the ears, and the eyelids. Females are more prone to this affection than males, two-thirds of all cases occurring in the former.

When Wyeth advocated the injection of boiling water into angiomata as a curative agent, the author doubts very much if he was aware of the greatness of his beneficent advice. In a series of some 26 cases subjected to the treatment, Reder has no failures to record. In every instance the results have been very gratifying. In most of the cases the lesion was upon the face and scalp; in 4 it was upon the tongue, ranging from the size of a filbert to that of an English walnut. One patient presented an angioma upon the left gluteal region, as large as a coconut, and another, a young man, 18 years of age, had a fusiform angiomatous growth upon the right middle finger between the second phalangeal articulation and the knuckle. This tumor caused great pain.

All forms of operative intervention in these vascular tumors incur great danger of hæmorrhage. In most instances this is alarming and exceedingly difficult to check.

In making the injection certain conveniences expedite the measure. A suitable syringe is essential. The author finds that an all glass syringe, with a good shoulder, a large ring on the piston, and an asbestos plunger, answers the purpose better than any of the others he has tried. A syringe with an all glass plunger has its drawbacks, inasmuch as the steam generated within the barrel finds its way between the barrel and the plunger, thus inhibiting the free and easy movement of the piston so essential to this procedure. The slip needle of small caliber is preferred. With it no time is lost in the transference of the boiling water. It should always be borne in mind that the water must be injected at as near boiling temperature as possible, and time is an important factor. The author uses a pair of

easy fitting chamoisette gloves of good thickness to protect his hands from the heat. The little finger of the glove is cut off, so that the degree of heat in the tissues can be judged by occasional contact with the little finger.

The arrangement in the operating room should be such that the surgeon stands between the vessel containing the boiling water, which is kept constantly at the boiling point over a flame, and the patient, at a distance that will not necessitate a step for the transference of the water into the tumor. The parts not involved in the growth should be protected with moist cloths, lest they become scalded by the hot water in the syringe being forced out by the generated steam.

The introduction of the needle and the force applied in injecting the hot water is of great importance. Inasmuch as the weak tissues of the new-growth do not offer the resistance of normal skin which overlays the angioma, the hot water injected without great care might cause these tissues to break down. Injections made directly into the enlarged capillaries are invariably followed by a necrosis. For this reason, it is well to make the initial injections through the sound skin, about one-sixteenth and one-eighth inch from the edge of the angioma, well beneath the neoplasm, thus assuring coagulation of the deeper parent vessels. This is also a wise precaution against the dangers of embolism.

Judgment should be exercised in introducing the needle to prevent the point from resting too near the opposite wall of the tumor. To properly estimate this procedure it is well to first insert the needle without the syringe, and push it through the mass till it can be felt on the opposite side, then withdraw it to the extent of half an inch. This gives a reasonable assurance that the boiling water can be introduced into the tumor without the probability of sloughing. When the skin begins to turn grayish in color, the injection into that area is discontinued. Hyperdistension must be most carefully guarded against. The quantity of water necessary to cause this bleaching rests wholly with the amount of tissue under treatment. After coagulation of this particular area has been satisfactorily accomplished, the point of the needle is made to penetrate into another and the hot water injected there.

The quantity which is introduced at one sitting amounts to three or four ounces in a tumor the size of a hen's egg, the time consumed in making the injection being about ten minutes. However, if the angioma is of unusual size, it would be advisable to treat only a portion of it at one time, making a subsequent injection two or three weeks later. It is a wise precaution to apply ice or very cold compresses to the tumor and surrounding tissues immediately after the procedure for the first four to six hours, thereby lessening the severity of the œdema.

The course of an angioma successfully injected is one of gradual diminution, the greatest progress being made from the second to the third week. A

tumor the size of a hen's egg would usually require six or eight weeks for its disappearance. If the injection has been a fortunate one, that is, free from any accident, such as cicatrization following sloughing, the site that once harbored the angioma will appear healthy and quite normal.

ELECTROLOGY

Case, J. T.: Basic Considerations in the Röntgen Study of Intestinal Stasis. *Penn. M. J.*, 1915, xviii, 683.

Case presents a lengthy and comprehensive paper, not as a demonstration of technicalities, but as an endeavor to show the method in which routine röntgenological study of intestinal stasis should be carried out as an aid to clinical diagnosis. Röntgenology, to be of the greatest use in diagnostics, must not be separated from clinical medicine. The term "X-ray diagnosis" is a misnomer; we should refer to the "X-ray findings" and correlate them with the findings of other methods of research. In intestinal stasis the factors are mechanical, and röntgen studies deal only with mechanical causes.

The author points out that in the diagnostics of internal medicine the technique of the examinations is far from being standardized as in other branches of medicine into which X-ray examinations enter. Reliable deductions cannot be drawn from a study of plates alone, but a combined technique largely fluoroscopic with a few plate records for elucidation of doubtful points is essential.

The röntgenologist should be allowed 4 or 5 days, in all cases not immediately urgent, for adequate routine study. Complete alimentary tract examination is necessary in every case even when symptoms are localized. A study of the function of the bowel must be made on the functioning bowel. The routine studies are best made fluoroscopically after the administration of X-ray test meals and injection of opaque enemata.

Case holds that the conclusions which may be drawn from X-ray pictures alone are extremely unreliable, and one may say almost negligible in importance. This is more particularly true of the gastro-intestinal tract, and Case asserts that, with the exception of gross malignant lesions, it may be declared dogmatically that there is no X-ray finding of value concerning the intestinal tract which cannot be ascertained much more easily and more definitely from fluoroscopic examination than from plates.

The author prefers the horizontal position for fluoroscopic examination, and enters into a detailed description of the findings in the normal intestine before considering pathological conditions. He pays little attention to morphology, as position and caliber are constantly changing in the same patient.

Case considers peristaltic colonic movements at length and remarks that the introduction of röntgen methods, particularly the work of Cannon, has

thrown much light on the subject. The existence of a tonic constriction ring (similar to that in the stomach) in the right half of the colon is discussed, and Case refers to Boehm's and his own X-ray studies as being the only publications on this subject. From his own as well as the observations of others Case assumes that when for any reason the colon is hypertonic, or its contents increased through obstruction in the distal end, the location of the tonic constriction ring, from which antiperistaltic waves proceed, moves distalward.

In constipation the most frequent X-ray finding is a marked spasticity of the left half of the colon especially the iliac and pelvic colon; and this spasticity may be indicated röntgenologically in several ways indicated by the author. Similarly in the cases of adhesions.

Stasis does not usually occur in the left half of the colon proximal to the spastic portion, but in the cæcum and ascending colon to which point the bowel contents are carried by the exaggerated antiperistaltic influence resulting from the spasticity. Most of such cases show signs of chronic peripendicular adhesions, which the author thinks due to a disturbance of function of a sphincteric mechanism at the appendicular orifice, the existence of which appears reasonable.

Ileocæcal incompetency is considered an important factor in stasis; but, as regards Lane's kinks, the author, after his experience in observing several thousand cases in the course of which hundreds of such kinks were demonstrated röntgenologically, does not attach much importance to them.

Multiple diverticula of the colon present characteristic röntgenologic appearances following the passage of an opaque meal. Small rounded shadows which maintain their relative positions are observed in the affected areas near the junction of the iliac and pelvic colon.

From his studies of the various factors the author is forced to conclude that in the majority of cases of constipation the cause is located below the crest of the left ileum, and if not primarily due to a spasticity at least exhibits spasticity as an important factor. Atony of the bowel muscle is excluded, as it is known that in the majority of cases the bowel is hypertonic.

H. E. POTTER.

Bissell, J. B.: Cancer Destruction by Radium. *Surg., Gynec. & Obst.*, 1915, xxi, 98.

The author collates the reports of various pathologists on the anatomical and histological alterations in living tissues affected by radium applications. Microscopical examinations were made of these tissues at various periods of time during the radium treatment. The results show curious and striking changes. In epitheliomata and carcinomata absolute destruction of the characteristic malignant cells are seen in some cases. The alteration shown in the section of sarcomatous tissue taken from time to time from various patients under repeated applications of radium shows slow dis-

appearance of the characteristic cells, their replacement by embryonic connective tissue and a final structure resembling fibroma with myxomatous changes.

Bissell selects 11 of his cases, all proven malignant by pathological examination, which were clinically neoplasms of more or less malignancy as well, to show the favorable result of radium treatment. All of these patients were either recurrences following operation, some of them for the third or fourth time, or were inoperable from the location of the growth, or because of its extent, or for other good reasons, and were obliged to resort to radium as the last hope. Because of such extraordinary favorable results, even if only temporary, the author suggests a more extensive use of the remedy, better knowledge of its applicability, wider experience, closer attention to the details of technique such as screening, amounts to be applied, and the location thereof. He deprecates the fear of the bad effects following radium burns, and cites cases where his patients insisted upon it that they were more rapidly cured because of the burning, rather than in spite of it.

McCoy, J. N.: A Technique of the Röntgen Ray Massive Dose for Treatment of Deep-seated Carcinoma. *J. Indiana St. M. Ass.*, 1915, viii, 290.

In attacking a deep-seated carcinoma McCoy calls attention to the therapeutic action of the X-ray in depriving the cells of excess of glycogen which is necessary for their proliferation, and thereby causing death of the growth. He refers to the investigations of Brault and others who show that malignant formations of all kinds are richly supplied with glycogen and suggest that cancer-cells themselves may even be glycogenetic.

The physiologic effect of X-rays in decreasing the glycogen in tumors is known, and McCoy argues that if the deep cancer-cells can be reached with a sufficient dose the glycogenic feeding of these cells and all proliferations are stopped.

He uses heavy dosage from high vacuum tubes; but, as he found none of the usual filters sufficient in themselves to cut off the soft rays, he has combined them, and employs a filter consisting of twenty-four layers of chamois skin; one layer of sole leather, wet; and three millimeters of aluminum. Hard rays pass this in abundance.

For measuring the X-ray dosage McCoy prefers the method of MacKee of New York, which consists in placing the reaction piece under the filter on the skin. He thinks that it is the dosage on the skin rather than on the filter that should be gauged.

He reports 3 cases, 2 of recurrence, and 1 of adenocarcinoma, treated by massive dosage with combination filters, with disappearance of the cancers and no observed signs of recurrence. He thinks that this method secures the therapeutic benefits of X-rays in deep-seated carcinoma without serious injury to the skin.

H. E. POTTER.

Kolischer, G.: Modern Radiotherapy of Malignant Tumors. *Chicago Med. Rec.*, 1915, xxxvii, 378.

The intensive technique for deep-seated tumors, including hard rays, large ray quantity, absorbent screens, and cross-fire exposures, with adequate protection of other parts is dealt with briefly. Too small doses are found to stimulate malignant growths, therefore the maximum safe dose should be used. A two-weeks' interval is considered sufficient for superficial tissues to recover their integrity. Great attention should be given to the measurement of the dose in order to get the maximum therapeutic effect and yet avoid burns.

The results are various and cannot be predicted in a given case. The simultaneous administration of tumor extracts and precipitins are of service. Except in cancer of the uterus a combination of surgery and radiotherapy is advisable for deep-lying growths. The preliminary destruction of the growth by diathermy is often most desirable.

H. E. POTTER.

Boggs, R. H.: The Treatment of Epithelioma by Modern Radiation. *N. Y. M. J.*, 1915, cii, 38.

Modern radiation consists in the use of radium and of the röntgen rays with the improved technique of either the Coolidge or the hydrogen X-ray tube. By these means advanced cases of epithelioma, formerly considered quite hopeless, have been cured. By experience, however, the mild and half-hearted treatment with small doses has proved to be useless, but the massive or intensive treatment has demonstrated itself as most effective and unseemingly permanent in its results.

Epithelioma is carcinoma of the epithelial structures of the skin or mucous membranes. The successful treatment of it requires the radical destruction of all the carcinomatous tissue. Although epithelioma is very common, its first appearance and symptoms have such a deceptively innocent character that it is often misdiagnosed and neglected by the average physician. It may be stated dogmatically that in a man more than 40 years of age, a persistent skin lesion is always liable to epitheliomatous degeneration. In such cases a physician who is not quite sure of his ground must as a matter of plain professional duty, confer with a competent consultant.

Electrolysis, fulguration, carbon dioxide, superficial caustics, such as arsenic paste, sulphate of zinc, and pyrogallol acid have been used in the treatment of epithelioma with some degree of success in particularly favorable cases, but they are irritating agents and, in so far, commonly dangerous. As far as present experience and knowledge go no method of treatment of epithelioma can be considered so safe and sure as radiotherapy with its complete destruction of all epitheliomatous tissue and the consequent permanency of cure, its cosmetic results, its freedom from pain, and convenience of application. As a result of the rapid development of radiotherapy in recent years the leading surgical

authorities recognize its value as a legitimate method of treatment. *Johnson's Surgery* for 1915 states that radium has proved its wonderful power for destroying cancer-cells and that in lesions on the face it is superior to any other curative agent. In fact, it is wonderfully efficient in the treatment of any skin cancer. The prophylactic treatment is of course the safest. The physician should, for this reason always counsel the removal of excrescences, such as warts, moles, ragged teeth, abrasion of alae nares, and insist on the proper and prompt treatment of cracked lips and the removal of any degenerated tissue. All such precancerous changes are now well recognized clinically. This is strikingly illustrated by a passage relative to Paget's disease in *A Year's Progress in Medicine and Surgery*: "This at first seemingly insignificant perimamillary irritation is trifled with and treated with pastes and salves and yet it is essential cancer of the most terribly malignant and deadly kind. It should be called Paget's cancer and attacked at once with the most improved and effective weapons."

The surgical removal of epithelioma can be justified only in those cases which require the excision of contiguous lymphatic glands. When there is no hope of the radical removal of cancer by excision an operation should not be resorted to, because it will merely increase the activity of the growth and neither prolong life nor diminish suffering. Radium and X-ray treatment should always be considered first, because when properly applied with expert skill practically all epitheliomatous tissues have yielded to these agents with few recurrences. Particularly in epithelioma of the lower lip, radium and X-rays, by the massive method, have proved most efficient. According to Murphy a British medical journal analyzed a series of lip cancers extending over a period of twenty-five years. From the cases that could be traced it was demonstrated that when there was no ascertainable metastasis surgery was ineffective in 52 per cent and in 76 per cent of the cases in which there was glandular involvement at the time of the operation. Many of the cases would have received great palliation and some undoubtedly could have been cured by means of proper radiation, even when the disease was recurrent and inoperable.

In every case conditions must determine whether the preference should be given to radium or to the X-rays, but radium should be selected invariably whenever there is a lesion on mucous membranes in cavities. In epithelioma of the mouth, throat, or any mucous membrane the radio-active substances can be placed close to the lesion or growth, and are for this reason superior to the röntgen rays, but when the lymphatics are involved the röntgen rays have an efficiency superior to any quantity of radium so far used for the treatment of such cases. To get the best results radium and the X-rays must be judiciously used together, each where it will do the most good.

The treatment of epithelioma by means of modern

radiation is, therefore, no longer a mere experiment, but a therapeutical method, the value of which is recognized by the best surgeons and advanced practitioners everywhere. This method has proved successful when all other means have proved powerless and hopeless. Since this method is so efficient there is no longer any excuse for professional negligence.

DONALD GORDON.

Abbe, R.: Röntgen-Ray Epithelioma, Curable by Radium—an Apparent Paradox. *J. Am. M. Ass.*, 1915, lxxv, 220.

Abbe says that logically it is clear that if all of the vast number of senile keratoses and early epitheliomata of the face and hands can be cured with certainty by radium, then the early röntgen-ray growths of the same type should yield equally well.

It seems almost a paradox of radiology that the accepted use of a heavy γ -radiation from a röntgen tube will cause a diseased condition of the skin, which a similar radiation from a tube of radium will cure. This becomes intelligible when it is known that the output of the röntgen-ray tube is almost wholly composed of hard, penetrating, irritating γ -rays. The radium discharges the β -rays in great quantities as well as the γ -rays. It is the β -ray that has been proved beyond question to be the efficient curative power; and it is only the secondary β -rays, generated by the X-rays when striking any resisting substance, that are of value in röntgen-ray tube work.

The amount of radiant energy needed in the treatment of röntgen-ray growths is the same as would be effective in the curing of ordinary papillomata or basal-cell epitheliomata of the same degree of advancement. The sequel of an application consists in ten days' latent action, ten days' activity, and ten days' quiescence; followed by desquamation of the crusts from a soft healed surface.

Abbe has been successfully following this course of treatment since 1903; and from his experience he says that no cases of chronic dermal röntgen-ray disease in early stages which have presented themselves to him have failed to yield to radium therapy.

H. E. POTTER.

Case, J. T.: Röntgentherapy in Deep-seated Non-malignant Lesions. *Surg., Gynec. & Obst.*, 1915, xxi, 70.

According to Case, the term "deep röntgentherapy" in its modern sense, carries with it a very different meaning from "deep röntgentherapy" as used ten years ago, and the results are several hundred per cent better even than they were three years ago. Literature three or four years old is largely unreliable as a basis for conclusions as to present indications for the deep application of very hard X-rays.

This new significance of the term is due, firstly, to the invention of the Coolidge tube which has placed in the hands of röntgen workers a very powerful but precise instrument, by the use of

which it is possible to control the dosage with very great practical accuracy; secondly, the perfection of newer and more powerful sources of high-tension current; and thirdly, the development of a technique involving filtered irradiation at short focus-skin distance through multiple skin areas.

Accurate estimating and recording of dosage is now possible and should be compelled. Rays of much higher penetration are now available, and thanks to filtration through heavy aluminum, can be used in twice the usual amount on each skin area. By dividing the skin overlying or surrounding the organ to be treated into a number of areas, using each as a port of entry (cross-fire method), the dosage of filtered ray reaching the affected deep part is further increased as many times as there are ports of entry. All of this makes it more than ever necessary to accurately measure and record the röntgen dosage, and no man should be permitted to practice röntgentherapy who is not equipped with the knowledge and instruments necessary to do this measuring of dosage.

In leukæmia deep röntgentherapy finds one of its most valuable applications. Applied over the long bones in the myelogenous form and over the long bones and the enlarged lymphatic structures in the lymphatic form, its results show it to be a valuable symptomatic, though transitory, therapeutic means of treatment. Practically all cases relapse sooner or later, yet the prognosis is more favorable as to uniformity of symptomatic improvement and lengthening of life than with any other measure. The latter is true also of pseudoleukæmia, though in this there is a 10 or 20 per cent prospect of lasting cure.

In splenic anæmia it should be possible to accomplish by the ray nearly all that splenectomy does. If splenectomy is a cure for this form of anæmia, then deep röntgentherapy is indicated and should be given a thorough trial before operation is resorted to.

In Graves' disease röntgentherapy by our present refined, intensive methods gives results almost unbelievably good. Here the treatment is not merely symptomatic, but, by profound depression of the secretory function, it has the character of an etiologic therapy, since it is aimed at the cause of a disease whose essential pathologic feature is hyperactivity or aberration of the thyroid secretory function.

In enlargement of the thymus röntgenization is a well established therapeutic measure. The younger the patient, the quicker the results.

In gynecology the chief indications for röntgentherapy are the treatment of climacteric and other known benign hæmorrhages in women past 38. It is necessary that the anatomical character of the endometrium be ascertained by microscopic examination of the curettings before röntgentherapy is decided upon. Careful diagnosis is required to rule out unsuitable cases. The treatment deserves much greater popularity.

Prostatic hypertrophy should also be amenable to

deep intensive irradiation in cases where operation is undesirable.

In skin and glandular tuberculosis röntgentherapy is an established method.

Pulmonary tuberculosis until recently has been considered beyond the reach of röntgenization, but recent experimental and clinical results of the röntgen treatment of pulmonary tuberculosis force us to reconsider our ideas on this subject. K  pferle's results are very suggestive and hope-inspiring.

Boggs, R. H.: Value of Radium, Supplemented by Cross-Fire R  ntgen Rays in Treatment of Malignancy. *Am. J. M. Sc.*, 1915, cl, 30.

With our present knowledge of radium and the r  ntgen rays, it is impossible to advocate the extended use of one to the exclusion of the other in the treatment of malignancy. Each agent has its place. Both forms of radiation have wide ranges of usefulness which differ under certain conditions and in adaptability to parts affected. When the γ -rays of radium are filtered from the α - and β -rays it is found that they conform in most respects to r  ntgen rays. During the past few years physicists have proved that both the r  ntgen rays and the γ -rays are ether impulses identical in nature, differing only in wave length and power of penetration.

While today we are using r  ntgen rays of much greater penetrating power and filtering out the lower inefficient rays, we must use different apparatus before we can produce rays with as great penetrating power as the highest γ -rays of radio-active substances.

In treating a case either by radium, mesothorium, or the r  ntgen rays we must always face a series of problems. Given a case with a certain lesion, its position, extent, its susceptibility to the influence to this or that radiation, then the problem is to determine the agent or agents to use. The duration and method of application can be varied almost to infinity. This enables us to realize how rich radiotherapy should be in its results when properly selected and employed.

Every radiotherapist knows that the beam of rays given off from a r  ntgen bulb or a radium tube is a mixture of heterogeneous rays, and that it is only by filtering and increasing the distance between the source of radiation that we can approach anything like a homogeneous ray. Then if we have homogeneous radiation we must not neglect the diminution of the distal dose by absorption by the tissues. There is always a difference between the proximal and distal dose. In using properly filtered radiation it has been estimated that each centimeter of tissue absorbs from 5 to 10 per cent of radiation, so it can readily be seen that the deeper the growth is situated the more cross-firing with any form of radiation is necessary.

Dessauer considers that it would be necessary to have a radium tube containing 5 grams of radium when properly filtered and placed at the proper distance to give off a homogeneous ray equal to a

bulb placed at the proper distance and properly filtered. No one has this amount nor is it obtainable. This explains why most of the European workers who have had the best results in the treatment of malignancy long ago realized the importance of using the röntgen rays from outside as an adjunct, and administering it through as many ports of entry as possible. In many places in the treatment of uterine cancer they used over forty ports of entry. This is a radical change from the technique that was used when the first cases of uterine cancer were treated by röntgenotherapy years ago when little more than superficial or skin effect was produced. The treatment was given with an unshielded tube placed anteriorly to the abdomen the same as when making a radiogram.

In carcinoma of the mouth, throat, rectum, or vagina, the radio-active substances can be placed within the lumen of the organ or in close proximity to the growth, and they are superior to the röntgen rays as far as the local treatment is concerned. But in all these cases—particularly if the disease is advanced and the lymphatics involved—the röntgen rays are superior to any quantity of radium anyone has used up to the present time for the treatment of lymphatic glands. It must also be remembered that these high-penetrating rays, given in great quantities and properly filtered, not only affect the adjacent lymphatic glands but also have a marked effect on the local tumor. In other words, it seems that the treatment is not complete if the radium is used locally unless it is followed for a certain length of time by röntgenotherapy. Radium might be compared to surgery in its action on the local tumor. The great advantage of the combined treatment is thus self-evident. Some inoperable cases of carcinoma which have not been cured have been improved to such a degree that a subsequent operation could be performed. No matter how rare these cases may be, every case should at least have this amount of palliation. It is certainly true that the diagnosis of an inoperable malignant growth should not be equivalent to a death warrant to the patient. Post-operative treatment carried out in this manner would undoubtedly increase the number of permanent cures. If radiotherapy could change the percentage of cures in only a small proportion of cases it is more than justified. It would seem that this is not advising too much when some noted German gynecologists advise radiation as the only method of treating operable cases of cancer.

The success of radium therapy in the treatment of malignancy is attained chiefly in those cases in which the radio-active substance is brought into contact with the growth, either in or on it, without an intervening layer of healthy tissue, and in which the thickness of the tumor does not exceed 4 cm. It is preferable to use the hard röntgen rays for all deep-seated growths in which there is an intervening layer of healthy tissue. Radium gives the best results when it is brought in contact with the

growth and supplemented by the röntgen rays from outside by the cross-fire method. It is necessary for the operator to know the relative value of radium and röntgen rays when combining these two agents.

MILITARY SURGERY

Tilman and Enderlen: Gunshot Wounds of the Skull (Schädelschüsse). *Beitr. z. klin. Chir.*, 1915, xcvi, 454.

Tilman and Enderlen read papers on this subject before the Meeting of Military Surgeons recently held in Brussels. They are in accord as to most points, though Tilman recommends at first only the necessary care of the wound, while Enderlen is an advocate of early operation. Percentages in regard to mortality are of no special value in these injuries, for many die later, after apparent recovery.

There is little danger of hæmorrhage, for skull wounds bleed little. The greatest danger is that of infection, causing meningitis or encephalitis. There may be a non-septic encephalitis from the inflammatory reaction of the brain to the presence of the foreign body, even though it is not infected. It therefore becomes a question whether there is greater danger in removing the projectile or leaving it. Operation should be performed only when aseptic treatment of the wound can be guaranteed.

The brain is very sensitive to infection and also to the action of disinfectants, so that their use in operations does more harm than good. Projectiles remaining in the brain should not be removed until their exact location has been determined by means of X-ray. In any necessary probing of the brain the finger should be used, rather than an instrument, for the finger can detect the difference in consistency between blood-clot and brain substance, while a sound cannot. Operation on the brain, when necessary can be performed without an anæsthetic at all or under local anæsthesia.

Meningitis should be treated by repeated lumbar puncture. Encephalitis is much more frequent than meningitis; the suppurative form is rapidly fatal. The serous, hæmorrhagic, and reactive forms may recover. If the disease becomes chronic brain abscesses are formed, which have to be emptied by trephining. The non-suppurative form of encephalitis may lead to softening and discharge of brain substance, or if the brain substance does not give way cysts may be formed; these may arise a long time after the injury. No patient who has had a brain injury should be transported for at least 8 days, even if there is apparent recovery. He should remain under medical surveillance for at least three weeks. Plastic operations are not advisable early, and even later they should be performed only when there are strict indications. Every effort should be made to secure healing by first intention, for it has been found that later epileptic attacks are much more frequent in cases where there has been a prolonged period of suppuration.

A. Goss.

Couteaud and Bellot: Injuries of the Skull by Projectiles (Des traumatismes crâniens par projectiles de guerre). *Bull. et mém. Soc. de chir. de Par.*, 1915, xli, 1110.

The authors give the histories of 29 cases of gunshot injuries of the skull operated upon by them. Sixteen of them were simple penetrating wounds, in 8 the bullet had passed entirely through the skull, and in 5 the bone had simply been pushed in on the brain, without perforation of the dura mater. In most of the penetrating wounds only fragments of bone were found in the brain; the bullets had not lodged in the brain. In such cases the bone fragments should be carefully removed and the wound drained, but there should be no probing for foreign bodies. It is only rarely necessary to extract a bullet from the brain.

All of the authors' operations were performed under local anæsthesia. They used a mixture of one part of 0.5 per cent cocaine and two parts of 0.5 per cent stovaine, with a few drops of adrenalin added. In addition to the avoidance of surgical shock and vomiting after the anæsthetic, local anæsthesia allows the patient to make certain movements and responses that are of assistance to the operator. Ten of the 29 patients died, a mortality of 34.5 per cent. Fifty per cent of the patients with bullets passing entirely through the brain died. All except one of the patients who died were in very bad condition when operated upon; they were either in pronounced coma or meningo-encephalitis had already begun. In the cases where there was loss of substance in the parietal lobes there was paralysis, but in the injuries of the frontal lobes there were scarcely any cerebral symptoms and the patients all regained a normal psychic condition. A. Goss.

Reynier, P.: Heteroplastic Grafts to Repair Gaps in the Skull (Réparation des pertes osseuses crâniennes dans les plaies de guerre; greffes hétéroplastiques). *Bull. Acad. de méd., Par.*, 1915, lxxiii, 753.

Reynier finds that many soldiers returning from the war have gaps in the skull, through which a hernia of the brain is visible and palpable. Covering the gap has the double advantage of protecting the brain and by compression relieving certain unpleasant symptoms from which these patients suffer. Various authors have used metallic plates for this purpose, but Reynier believes that the plates may be partially absorbed and that they act as foreign bodies and are liable to produce infection. Therefore he has tried using bone-plates. He has found a few cases recorded in the literature where the bones of dogs or other animals were used for this purpose, with apparent success, but the ultimate results are not reported in any of the cases. He describes a case of his own in which he used the scapula of a rabbit. The bone was cut to fit the gap, and the periosteum of the transplant was sutured to that of the skull. It has been two months since the operation and the result is perfect.

In the discussion SEBILEAU stated that hernia of the brain is acute and generally due to cerebral abscess; it does not become chronic. Generally gaps in the skull are filled in with new-formed fibrous tissue sufficiently to protect the brain, but in the few cases where an artificial substitute is necessary he thinks metal-plates are superior to bone. Bone from another species of animal will not take, and he thinks Reynier's result will not be permanent. He claims that metal-plates do not cause infection and are not absorbed, and cites in support of his statement several cases of his own and other surgeons. Pozzi also questioned the possibility of a heteroplastic graft being permanent; if bone is to be used he thinks it should be taken from the patient himself. Bone from another animal is simply tolerated, and will, he thinks, ultimately be absorbed. A. Goss.

Frey, H., and Selye, H.: Surgery of Gunshot Injuries of the Brain (Beiträge zur Chirurgie der Schussverletzungen des Gehirns). *Wien. klin. Wchnschr.*, 1915, xxviii, 693, 723.

All cases of gunshot injury of the brain should be carried from the front to where they can get hospital treatment as quickly as possible, so that they may be operated upon at once. There is no particular danger of injury from the transportation. On the field a simple occlusion dressing is all that is necessary, and this should not be changed until the patient has arrived at the hospital. No definite conclusions as to the extent and depth of the injury can be drawn from the external appearance.

All wounds should be carefully incised and explored. If the bone is found intact no further operation is necessary; but if the bone is injured the skull must be opened up. Enough bone must be removed so that sound and normal dura can be seen in all directions. After the removal of foreign bodies, splinters of bone, and crushed brain tissue, a cross-shaped incision is made in the dura, reaching to the edges of the bone. The wound must be dressed in such a way that the exposed parts of the brain are not pressed upon either by the dressings or by the natural coverings of the brain. Prolapse of the brain appearing later is of no significance if pulsation in it continues. If pulsation ceases the prolapse should be reduced and the brain explored again.

After serious brain operations the authors give urotropine, 2 to 3 gms. per day internally, on account of its effect on the cerebrospinal fluid. When treated in this way the prognosis is very good. Only 8 per cent of the authors' cases died; but the time since operation is too short to report on permanent results. A. Goss.

Elschnig: Injuries of the Eye in War (Kriegsverletzungen des Auges). *Med. Klin., Berl.*, 1915, xi, 553.

Elschnig was surprised to find a large number of cases in which disease of the eye had existed before

the soldier entered military service. He mentions two cases of choked disc from brain tumor, which were not discovered till after the men had been at the front for weeks. There are many cases of indirect injury of the eye.

Besides the numerous cases of secondary injury of the eye from wounds of the brain and of the eye muscles, Elschnig had four cases of paresis of the ocular fibers of the sympathetic from injuries of the superior ganglion of the cervical sympathetic. In these cases he was surprised to find a negative adrenalin reaction, which became positive a few hours after operation, even when the paresis of the sympathetic was of months' duration. Severe destructive injuries of the eye were rather rare, due perhaps to the fact that most of these cases die on the field. He had 36 cases of destruction of one eye, some of them evidently due to explosive bullets. In three cases both eyes were destroyed by bullets passing through both temporal bones. Diseases of the accessory sinuses are very frequent in connection with injuries of the eye. He mentions his method of substitution of the vitreous body, which he applied in three cases for hæmorrhage of the vitreous with excellent results. By this substitution the eyes may be saved in many cases and the normal form preserved in others, where without it there is loss of sight and great disfigurement.

There is an appalling number of slight injuries of the eye by fragments of metal, and it is these cases that demand the most consideration, for with early care by a skilled ophthalmologist the sight could be saved, while under present conditions great numbers lose their sight. Elschnig has had many cases come to him too late to be saved, though it was apparent that by early care they might have been cured. He urges the necessity for a consulting ophthalmologist at all the hospitals near the front, and thinks the hospital management should be held responsible for cases of blindness that could have been prevented by early care. A. Goss.

Bahr, C.: First-Aid Treatment of Eye Injuries (Ratschläge für die erste Wundbehandlung bei Augenverletzungen im Kriege). *München. med. Wchnschr.*, 1915, lxii, 696.

Bahr has observed a large number of cases of sympathetic ophthalmia since the beginning of the war. In his 8 years' experience with industrial accidents to the eyes he has found that infection can be prevented by the use of 10 per cent tincture of iodine. This is very painful, so it is best to anæsthetize with cocaine if possible, but if cocaine is not to be had it can be done without anæsthesia. It is better for the patient to bear the pain, though quite severe, than to run the risk of losing the eye by infection.

The edges of the wound and any prolapsed parts, as the iris and vitreous body, are painted with the iodine till they are dark brown, care being taken to avoid touching any uninjured parts, as it causes

unnecessary pain. The color disappears within 24 hours; he has never seen permanent discoloration from the iodine. A layer of cotton is placed under the lid to protect the connective tissue from contact with the iodine. The eye is then dressed, and hot compresses may be applied to decrease the pain. The dressing can be left unchanged for two or three days. If by the end of that time the pain has not stopped it indicates that there is some infection that has not been reached; but in practically all cases infection is prevented by this treatment.

A. Goss.

Sauerbruch and Borchard: Gunshot Wounds of the Thorax (Brustschüsse). *Beitr. z. klin. Chir.*, 1915, xcvi, 489.

Sauerbruch and Bochar read papers on this subject before the meeting of military surgeons held this spring in Brussels. They find that wounds of the thorax in this war are more serious than they have previously been considered, doubtless due to the greater proportion of wounds with shrapnel and shells. The dangers are from pneumothorax, hæmorrhage, and infection. Bleeding is generally from the large vessels; acute hæmorrhage from the lung itself is rare, but there is apt to be late hæmorrhage, 8 to 14 days after the wound, due to liquefaction of lung tissue or erosion of blood-vessels.

Infection is rare in bullet wounds, and therefore the majority of them recover, but in large injuries from shells and shrapnel the danger of infection is very great. Of 23 extensive wounds of the thoracic wall treated by tampon and closing of the wound, 17 died within the first 12 days. The prognosis is somewhat better when the wall of the thorax is freely excised, the thoracic cavity cleansed, fragments of shell and bone removed, and the lung sutured to the opening in the wall of the thorax. If the patient survives the first few days a pyopneumothorax often develops, which has to be treated by operation.

The treatment of simple bullet wounds is simple and strictly conservative. Rest, administration of morphine, and a position to favor expectoration are all that is necessary. It is important, however, not to allow the patients to be moved for at least two weeks. If there are signs of effusion with pressure on the thoracic organs puncture is indicated. Another indication for puncture is high, continuous fever. Puncture is to be preferred to rib resection also in most cases of empyema developing in a hæmothorax; operation is indicated only in putrid empyema, indicating the beginning of a gangrenous process. Puncture is further indicated when the hæmothorax shows no sign of absorption after several weeks.

The indications are quite different in shell and shrapnel injuries. Here conservative treatment is entirely inadequate. The thoracic wall should be excised, the lung wound freshened and sutured, and means provided for irrigating the pleural cavity. This treatment gives better results than the con-

servative, even when the patients are in very bad condition, especially if positive or negative pressure apparatus is available. The prognosis is better if the gangrene is circumscribed, leading to the formation of an encapsulated empyema. In such cases several ribs should be resected and the abscess opened. In lung wounds complicated by abdominal injuries the primary operation should be a laparotomy if the wounds are caused by rifle bullets; if from shells or shrapnel the thorax should be opened first and the abdomen reached through the diaphragm.

A. Goss.

Körte and Schmieden: Gunshot Wounds of the Abdomen (Bauchschüsse). *Beitr. z. klin. Chir.*, 1915, xcvi, 509.

Körte and Schmieden reported on abdominal wounds at the meeting of military surgeons at Brussels this spring.

Körte presented statistics of 312 cases and from his experience is an advocate of conservative treatment. He says it has not been demonstrated that more lives are saved by operation than by expectant treatment. It is not always possible to make an early diagnosis as to whether there is perforation of the intestine or not. If operation is to be performed it must be within the first 12 hours, the patient should not have been carried far, his general condition must be reasonably good, and the surgeon must be skilled and observe strict asepsis.

Schmieden advocates operative treatment. He says that spontaneous recovery in abdominal wounds is extremely rare, and even of these who apparently recover many die later of chronic peritonitis. He agrees that operation should be done within the first 12 hours, and, thinks that arrangements should be made to get hold of as many cases as possible within that time and treat them operatively. War statistics, he says, are not particularly reliable, but he presents a series of statistics in which the percentage of recoveries was considerably higher after operation than after expectant treatment. With armies on the march of course it is difficult to bring about the necessary conditions for operation, but with the armies in the trenches it should be the treatment of choice.

In the discussion, FRIEDRICH said that with the conditions that prevail at the eastern battlefields it is almost impossible to operate with any chance of success.

KRASKE stated his belief that cases with and without intestinal injuries should be considered separately. Practically all cases with intestinal injury die if not treated. He has operated upon 14 cases recently with 6 recoveries.

SAUERBRUCH advocated early operation. He has operated upon 54 cases with 23 recoveries.

REHN advocated operation with the armies in the trenches, but not with armies on the march.

HANKEN advocated operation on all cases that come into the surgeon's hands within 12 hours.

A. Goss.

Guerry, L.: Perforating Gunshot Wounds of the Abdomen. *Ann. Surg., Phila.*, 1915, lxi, 694.

Twenty-seven cases are reported, with 2 deaths. The youngest case operated on was 7 years of age, the oldest 57 years. The average length of time that elapsed between the shooting and the operation was between 8 and 9 hours. The earliest case operated on was 3 hours and the latest 36 hours after injury. The smallest number of perforations was 2, the largest 22. The average number of perforations for the entire series was about 9.

In 5 cases the injury was confined to the upper abdomen (above the umbilicus), and in 3 other cases both lower and upper abdomen were involved. Of the 5 cases in which the upper abdominal cavity was the seat of injury, once there were 2 perforations only in the transverse colon; three times the colon, stomach, and liver were injured, and once the spleen and stomach. Of the 3 cases in which both the lower and upper abdomen were involved twice, besides 3 perforations to the small intestines, both colon and stomach were injured, and in 1 case both colon and spleen were penetrated with two small intestinal holes. In the remaining 19 cases the projectile did not enter the upper abdomen. The ureter was divided low down in 1 case. None of the great trunk vessels were injured except in the two patients who died. In about 10 cases there was a very serious hæmorrhage from the injured mesenteric vessels.

The element of shock was very much more marked in the white than in the colored patients; in more than half of the colored patients the amount of shock present was a negligible factor, while only 3 out of the 12 white patients were not in a condition of serious shock, there being 12 white and 15 colored cases.

The only way to determine certainly whether or not perforations have occurred is by operation and this should be done in practically every case. There should be no surmising as to whether the bullet has entered the abdomen and produced perforation or not. This question should be settled by exploratory cœliotomy. Not all, but quite a few, of these cases, especially where shock is present and hæmorrhage not serious, will be made safer surgical risks by allowing them a reasonable time in which to react from the primary effects of the injury. If a patient suffering from one of these injuries presents himself for operation and has only one chance in a thousand to recover under surgical treatment, he should be given that chance and any time limit up to the point of the patient being moribund should be considered artificial. One case was operated on 24, one 36, one 18, two 12, and one 17 hours after injury and only one of these cases died.

Injuries above the umbilicus are more dangerous, harder to manage, and have a higher mortality than injuries to the lower abdomen; injuries to the large bowel the author believes to be more dangerous than injuries to the small bowel.

In practically all cases in this series general irrigation of the abdominal cavity through a Blake two-way irrigator was practiced. Every case was drained. A Keith glass drainage tube was placed through the angle of the median incision into Douglas' pouch; depending on conditions, a small Keith tube was so placed as to drain each loin.

On the first, fourth, and sixth days after injury cases of this character are given an immunizing dose of antitetanic serum. EDWARD L. CORNELL.

Leriche, R.: Necessity for Systematic Operation in Abdominal Wounds (Nécessité d'opérer systématiquement les plaies de l'abdomen). *Presse méd.*, 1915, xxiii, 221.

Contrary to most writers on the subject Leriche is an earnest advocate of operation in abdominal wounds. He says that the chief objection urged against it is that it is impracticable on account of the large number of wounded to be taken care of. He suggests the establishment of a stationary ambulance near the field, to be used as an operating room for abdominal cases. Another objection is the high mortality; but there is of necessity a high mortality in abdominal wounds, whether the treatment is surgical or expectant. He has seen 117 cases treated expectantly with a mortality of 85 per cent, and other surgeons give mortality statistics of 70 per cent and up. Leriche thinks this mortality could be materially reduced by operation. He has only operated upon two cases himself, with recovery in both.

Many patients with abdominal wounds die from hæmorrhage from the mesenteric vessels, when no other organs are injured. These cases could certainly be saved by suturing the vessels. Many wounds of the intestine and stomach could be sutured and the patients saved if they could be operated upon early. Patients with wounds of the liver and spleen certainly stand a much better chance with operation than without. He urges that a systematic attempt at operative treatment be made to see whether the high mortality cannot be reduced in this way. A. Goss.

Enderlen and Sauerbruch: Operative Treatment of Gunshot Injuries of the Intestine (Die operative Behandlung der Darmschüsse im Kriege). *Med. Klin.*, Berl., 1915, xi, 823.

Enderlen and Sauerbruch report on 227 cases of operation for abdominal injuries, in 211 of which the intestine was injured. They are ardent advocates of operative treatment in such injuries. The favorable results that some surgeons have reported from conservative treatment are due to the fact that they included all cases of abdominal injury, a large percentage of them being extra-peritoneal.

The authors had 52 cases of intestinal wounds that were treated conservatively; 46 of them died in the field hospital and 3 of them died later; only 4 were discharged and sent home apparently well;

even if they all lived the mortality would be 94 per cent. On the other hand among the 211 operated cases the mortality was 44.4 per cent.

It is of course sometimes difficult to make a diagnosis as to whether the intestine is injured or not, but if the abdomen is tense and painful, the pulse small and frequent; if there is nausea and vomiting, and particularly if there is costal breathing, there is probably intraperitoneal injury, and if so operation is indicated whether the intestine is injured or not. Even those who oppose operation for intestinal wounds admit the necessity for it in intra-abdominal hæmorrhage.

Among the authors' more than 200 cases a mistaken diagnosis of intestinal injury was made only 8 times, and none of these patients was injured by the operation. The operation is performed in the same way as in civil practice, and careful after-treatment is necessary. Salt solution is given by the drop method. Hot packs and hot-air treatment are beneficial when possible to use; they stimulate peristalsis and are pleasant to the patient. The patients are given fluid the first day; if the intestinal suture is firm it will hold anyway and if it is not abstinence does no good. The patient should not be transported for four weeks, but if it becomes necessary to move them the operated patients are in better condition to stand it than those treated without operation. The patients should be operated on if possible within 12 hours of the injury. The results have been better the past few months than in the early months of the war. The authors feel that operation for intestinal injuries may come to be one of the most hopeful fields of military surgery, as these patients are not left helpless and crippled afterward as are the amputation cases. A. Goss.

Tuffier: Resection of the Knee to Avoid Amputation of the Thigh in Fractures of the Knee (La résection du genou permet d'éviter l'amputation de la cuisse dans certaines fractures graves de l'articulation). *Presse méd.*, 1915, xxiii, 222.

Comminuted fractures of the knee with suppurative arthritis are very severe injuries, but Tuffier thinks amputation of the thigh is practiced much too freely in such cases. Among 200 patients upon whom amputation was performed at Maison Blanche, 30 were for injuries of the knee by rifle bullets, which is the least severe form of injury; those by shells and shrapnel are much worse.

Of 74 cases of amputation of the thigh at Saint-Maurice 22 were for wounds of the knee. Tuffier thinks many of these limbs could have been saved by resection at the knee-joint. The condition of a patient with an amputation of the thigh is incomparably worse than that of one with resection at the knee; moreover, the mortality in amputation at the thigh is very high. Sometimes these injuries of the knee recover with ankylosis after long treatment, but in some cases general septicæmia develops and amputation becomes necessary. In

the great majority of cases resection is sufficient. He cites four cases in his own practice. The case histories are given showing that they were very severe cases, and yet recovery was rapid and complete after resection.

A. Goss.

Gray, H. M. W.: Treatment of Gunshot Wounds of the Knee-Joint. *Brit. M. J.*, 1915, ii, 41.

The author reports that in the earlier part of the present war the result of treatment in gunshot wounds of the knee among those who recovered was marked by ankylosis in the majority of cases. The period of convalescence was usually most painful and precarious. These results are attributed to erroneous ideas of treatment which have been abandoned. Among the errors mentioned are: (1) the belief that suppurative infection of the joint demanded free and prolonged drainage; (2) the use of drainage tubes, more or less large in size, inserted deeply into the various recesses of the joint; and (3) the use of strong antiseptic treatment which was inimical to a *restitutio ad integrum*, because the deleterious action of the antiseptics destroyed the synovial membrane and cartilage, forming a fruitful source of ankylosis.

In lieu of the foregoing line of treatment the following factors are now insisted upon: (1) wounds of the joint that are apt to become septic demand mobilization; but few such cases when received from the front are provided with properly applied splints. This important lapse in treatment is apt to favor the entrance of sepsis to a knee previously infected, and again there is danger that it might stimulate a virulent, diffuse inflammation instead of a mild, localized one. It is insisted upon that during the treatment the splint be retained two or three weeks at least. Later, gentle passive movement is recommended; (2) formerly, foreign bodies were removed "only if they led to trouble"; now only those embedded in bone outside the joint are left undisturbed, all others are removed whether they are the source of immediate trouble or not; (3) excision of the wound in the skin and superficial tissues is now a routine process.

The present treatment is summarized as follows: Excise wounds of the skin and superficial soiled or necrotic muscle and fascia. Enlarge the wound freely if necessary. Remove foreign bodies, previously localized by X-rays, after possible enlargement of the synovial membrane. Flush the synovial cavity with 5 per cent saline solution. In very acute cases make fresh incisions. Trim the edges of the wound in the synovial membrane; suture if the sepsis is not acute. Insert drainage tube down to but not through the wound in the synovial membrane. Fill the rest of the wound firmly with "tablet and gauze" dressing. Inject formalin, glycerine, or ether, through the fresh puncture. Clean and redisinfect the surrounding skin. Apply superficial dressings and light bandage. Immobilize in suitable splint. If this fails,

free arthrotomy, and possibly amputation should be employed.

The results are stated in 10 cases in which the old treatment was practiced in some and the new in a few others, and 36 cases by the new method as follows:

	No. of cases	Per cent
Deaths in spite of amputation.....	2	20
Amputation.....	3	30
Ankylosis.....	1	10
Doubtful.....	1	10
Free movement when discharged.....	3	30
	10	100
Death in spite of amputation.....	0	0
Amputation.....	3	8.33
Ankylosis.....	3	8.33
Doubtful.....	2	5.55
Free movement when discharged.....	28	77.77
	36	99.98

In looking over the 36 cases detailed briefly for the most part, the reviewer finds that 27 were due to shrapnel or shell fragment, and 9 resulted from bullets or missiles the nature of which is not specified. To have cured 28 of these with movable joints is an achievement that is heartily commended, considering the nature of the missiles causing the wounds.

The author insists on mobilization as a prime factor in all knee-joint wounds. The treatment is not new since it is an established mode of treatment in surgery as a rule, and military surgery in particular. We have taught the value of immobilization for years, not only in joint injuries and fractures from gunshot, but in all gunshot wounds including those of soft parts even where immobilization is impossible. Fixation of wounded parts plays a great rôle as a prophylactic against the development of infection. When enforced transportation is necessary, as often happens in military practice, it adds to the comfort of the patient in keeping down pain, it prevents the recurrence of hæmorrhage, and it also favors early healing.

The only thing recommended by the author that savors of new treatment is excision of the wound of the skin and superficial soiled or necrotic muscle and fascia, and this is only new as it may apply to the channel of a bullet wound and not to shell wounds or gunshot wounds which exhibit the characteristics of explosive effects. Here we have a great deal of devitalized tissue and the rule of treatment is the same as that practiced in all wounds with coagulation necrosis; i.e., the removal of contused parts. The rest of the so-called new treatment which refers to free drainage, removal of foreign bodies in the joint after localization by X-rays, flushing the synovial cavity with saline solution, insertion of drainage tubes to and not into the synovial cavity, etc., is sound practice.

After all, the outcome in war wounds of the knee-joint will largely depend on methods of conservation properly carried out, and more especially

on the characteristic features of these wounds. Slight wounds, such as simple perforation of the synovial membrane, etc., have a uniformly favorable outcome under modern surgical methods of treatment and immobilization. Lodged bullets in and around the joint complicate the outcome until they have been removed. The X-rays are a great guide in the treatment of such cases. Of 95 cases of gunshot wounds of the knee in the Anglo-Boer War, lodged bullets were successfully removed in 10 cases (Spencer). Gunshot wounds which groove the joint surfaces may or may not have many spicules of bone protruding, depending on the velocity and sectional area of the bullet. Many spicules and fissures in the tibia or femur add to the gravity of the wound. Complete perforations traversing the joint in all directions are very common with high-power military rifles and machine guns.

Perpendicular shots of this kind which cross the joint by the shortest route inflict a minimum amount of injury and are usually attended with good results.

In midrange, clean-cut perforations of the patella, condyles of the femur, and the epiphyseal end of the tibia are the rule, and they offer the best examples of so-called humane wounds. Implication of the joint by fissuring and comminution of the bones entering into its formation by shell fragments, shrapnel balls, or large caliber old-time lead bullets is apt to exhibit comminution of the epiphyses into the joint with liberation of isolated fragments of varying sizes. These are difficult wounds to treat successfully. They are lesions that often call for partial resection, primary or secondary amputation.

There were 95 gunshot wounds of the knee-joint in the Anglo-Boer War with a mortality of only 4.2 per cent. Amputation was done in 11.5 per cent of cases, all of which were injured by shell fragments. The fatalities were the result of sepsis from severe shell fracture (Stevenson).

The outcome of reduced caliber rifle injuries of the knee was shown in 17 cases at the battle of Santiago. No death was recorded, and 14 of the injured recovered and were returned to duty in the course of a few months. Three were discharged on a surgeon's certificate of disability.

Among 76 cases of gunshot wounds of the knee-joint in the Spanish-American War and Philippine Insurrection there was a mortality of 6.5 per cent. The wounds were inflicted by all kinds of missiles from large and small caliber hand weapons, shell fragments, and shrapnel. The treatment in these cases was by conservation in accordance with rules laid down in clean surgical practice, as well as this can be accomplished in field conditions. We have always figured that the outcome was good, but we admit that it might have been a trifle better under the strict rules properly adhered to, as recommended by Colonel Gray.

LOUIS A. LAGARDE.

Denk, W.: Infected Gunshot Injuries of Bones and Joints (Zur Klinik und Therapie der infizierten Knochen und Gelenkschüsse). *Wien. klin. Wchnschr.*, 1915, xxviii, 701.

In the treatment of infected injuries of the bones and joints every possible effort should be made to save the limb. In injuries of bones if there is no gas phlegmon or other malignant infection, expectant treatment is indicated at first, careful watch being kept of the patient's general condition. If improvement does not take place incision with removal of bone fragments or secondary trough-shaped osteotomy is indicated.

The indications for incision and removal of bone fragments are: continuous high fever, putrid supuration, signs of beginning sepsis, hæmorrhage, and streptococcus infection. After such operations care must be taken to avoid shortening of the extremity, especially the lower. It is well to keep the limb in extension with moderate weights until a callus is formed.

In cases of fistula or bone abscess sequestrotomy and trough-shaped osteotomy are indicated. The periosteum and soft parts are inverted into the trough and a tampon placed over them to keep them in place; no skin incision is made. The trough fills up with new-formed bone, as is shown by a series of röntgen pictures. To avoid spontaneous fracture, soon after the operation a fixation dressing is applied for five or six weeks.

In infected gunshot injuries of joints conservative treatment is indicated. Often even after infection in the joint has become manifest it is sufficient to immobilize the limb absolutely, apply moist dressings, and give large doses of salicylates. If this treatment is not effective arthrotomy and drainage, with the opening of any periarticular or burrowing abscesses, are indicated. If this treatment is not successful, resection is justified. This should also be the primary treatment in cases with severe crushing of the ends of the joints and virulent infection or necrosis of fragments. If all conservative methods fail or if the patient's life is threatened by a general infection, amputation should not be delayed too long.

A. Goss.

Perthes, G.: An Important Point in the Treatment of Gunshot Fractures (Eine wichtige Forderung für die Behandlung der Schussfrakturen). *München. med. Wchnschr.*, 1915, lxii, 754.

Perthes calls attention to the fact that absolute immobilization is of the greatest importance in the treatment of fractures. Many surgeons seem to forget this in dressing and the fracture is moved during the dressing. As a result there is pain, temperature, and increase in wound secretion. This is almost unavoidable if any of the numerous forms of splint are used that have to be removed during the dressing. Fenestrated plaster casts should be used, which allow free access to the wound. Illustrations are given of casts which permit this and also protect the edges of the window in

the cast against being soiled. When the wound has healed the usual treatment for a simple fracture can be applied.

A. Goss.

Lake, N. C.: The Plating of Gunshot Fractures.
Brit. M. J., 1915, ii, 44.

The questionable practice of plating in compound comminuted gunshot fractures among war wounds is dealt with interestingly by the author in a recital of his nine month's experience at the front, in France. He did not see it used in any of the French military hospitals that he visited nor did he hear of its use in many English ones.

The importance of obtaining a good anatomical result in the presence of comminuted bone and the difficulties which the latter offers is fully appreciated by the author. The hindrance, from the presence of sepsis which is found in all cases, is also noted. Lake's wide experience has taught him that fresh infection of soft parts is negligible in view of the already extensive damage, and that fresh infection of the bone does not occur to any extent worthy of consideration. In some of the smaller bones a previously septic wound has been found to heal completely over a plate, a fact which may be attributed to the healthy condition of the tissues prior to the injury. In most cases, however, the plates tend to loosen in the presence of sepsis, but not to the extent he was led to expect, and the loosening does not occur to an extent sufficient to affect the original object of the plates until the fragments have become partly fixed, in say, two or three weeks. The plates seem to have little effect on the septic process and some of the loose ones become consolidated again. For these reasons the author is of the opinion that objections to the use of internal splints are rather theoretical than otherwise. The ease with which the dressing can be manipulated, and massage and other treatments be applied to neighboring joints and soft tissues as compared to a limb under treatment by external splints is specially noted.

The amount of comminution necessitates the use of longer plates than those in ordinary use. In some shell wounds comminution is so extensive as to exclude the use of plates, and in these cases a divided plaster having a soft iron connecting piece bent to form a handle to manipulate the limb is found to be of value.

The plating operation is not undertaken until acute sepsis has been subdued and radiographs have been taken—about four days after admission. The taking of radiographs in two planes, at right angles to estimate the amount of destruction and to better reconstruct the damage done, is considered very essential. No routine method is used to combat sepsis, each case being treated according to indications. Ether, a dusting powder composed of benzoic acid 25 grams, salol 5 grams, quinine 25 grams, and magnesium carbonate 25 grams proved of use in very dirty cases after a preliminary cleaning under an anæsthetic. To establish the lymph flow as recommended by Sir Almroth Wright hypertonic

saline solutions with and without vaccines are used; but once the sepsis is limited, more reliance is placed on the application of a Bier's bandage or a suction cup when practicable. Sun-baths and injections of colloid gold, so highly recommended by French surgeons, have been used with doubtful results.

By the energetic use of the methods mentioned sepsis is considerably reduced after a few days, at which time plating can be done. In most of the war wounds an incision is unnecessary or the original wound needs to be only enlarged. The good exposure thus obtained is an advantage in point of drainage. The fragments are carefully replaced except those entirely detached that must obviously die. While this preliminary arrangement is being made, surrounding structures are carefully examined for injury. In a search of this kind, in two cases of plating of the humerus, the musculospinal nerve was found in such a position that it would later have been involved in callus. It was promptly freed and buried in muscle to prevent symptoms of pressure later on. Many such cases involving tendons, vessels, and nerves were found and remedied in accordance with the indications offered. After exposing the ends of the main fragments the plates are put in place without disturbing the periosteum unduly. The most useful plate employed was one having two screw holes near together at the end, with one or two intermediate ones. The latter often hold intervening small fragments in good position. It is preferable not to put screws near fractured ends. Holes are carbolyzed before putting the screws in place. Fresh incisions may be closed, although they may be left open a few days to insure drainage, and closed by suture later. The limb is found quite rigid after plating and the subsequent management is devoted to keeping down sepsis for the next three or four weeks. The author states that the limb may be treated the same as one without fracture, as far as early movements and massage may be indicated. After one month the parts have become solid enough so that any plates that show a tendency to be loose may be removed except where there is a gap, and the plate is then retained as it may assist in preventing shortening. Several weeks later a sequestrum is found embedded in a cavity of bone or fibrous tissue, which should be removed. To close the remaining cavity bismuth paste has given good results. Before this is resorted to, the cavity is swabbed with pure carbolic acid, and iodoform paste is used for a few days. Skin-grafting was often resorted to to assist in rapid closure of wounds.

Many cases remained ununited except by deposit of fibrous tissue between the bone-ends. For these bone-grafting is recommended later.

The concluding paragraph should convince anyone that it will be a long time, if ever, before plating becomes an adopted mode of treatment in gunshot fractures in military surgery.

Even in simple fractures asepsis has always been the *sine qua non* to intervention. Bone tissue at

best offers poor resistance against infection, and for that reason the propriety of plating bone in compound fractures has always been questionable. In gunshot fractures where so much comminution and laceration of tissue exists in the presence of heavy infection, and amid surroundings which often forbid the possibility of carrying out the rules of asepsis completely, as is found in the emergency conditions of field surgery, the practice of plating at best could only be undertaken by experts in selected cases.

In military surgery it should also be remembered that the gaps which are apt to occur in the continuity of the long bones from shell fracture and the comminution common to bullets of high velocity, have hitherto been filled in a surprising way by new bone. In the few cases in which Nature fails to provide the bone, there is an opportunity of replacing the intervening fibrous tissue with bone-grafts. In pseudo-arthritis with loss of bone substance bone-grafting offers absolutely safe and nearly perfect results. Lambotte states that personally he has never resorted to a mutilating operation for pseudo-arthritis from loss of bone substance. He strongly advocates strict asepsis in the use of bone-grafting and emphasizes his belief that living bone will graft itself perfectly and continue to live in its natural state, and this is especially true of autoplasmic grafts.

LOUIS A. LAGARDE.

Routier, A.: Technique for Late Secondary Amputations in War Injuries (Technique pour les amputations secondaires tardives chez les blessés de guerre). *Bull. et mém. Soc. de chir. de Par.*, 1915, xli, 1164.

Routier describes 3 cases on which he operated with excellent results by a method quite different from the classical amputation. In contrast he describes 2 cases in which he operated by the classical method and both patients died. The amputation is not carried above the injury into sound tissue, but is made in the very midst of the wound. Suture of the flaps is not attempted afterward and the result is very unsightly, but it has the advantage of leaving a longer bone-stump, it does not open up fresh bleeding surfaces and expose them to infection, but utilizes the granulating surfaces already present in the wound. It is rapid and easy of execution.

SEBILEAU also described 2 cases he had amputated by this method. It is to be regarded as an emergency method to be used only under such conditions as prevail at present, but in those conditions it is valuable because of its rapidity of execution and especially because fresh bleeding surfaces are not exposed to infection.

A. Goss.

Wolff, A.: Osteomyelitis of the Spinal Column After Gunshot Wound (Wirbelosteomyelitis nach Schussverletzung). *Deutsche med. Wchnschr.*, 1915, xli, 498.

Acute osteomyelitis of the spinal column is rare. Up to 1903 Gisel could find only 56 authentic cases

in the literature. Henle reported 5 cases due to trauma. Wolff describes a case in a soldier who had been shot in the neck just below the angle of the jaw. Three weeks later a fragment of a shell was removed through the oesophagus. He was apparently well and röntgen examination showed no injury of the vertebrae. Three weeks later — six weeks after the injury — he developed signs of meningitis, from which he died. Autopsy showed osteomyelitis of the third cervical vertebra and suppurative spinal meningitis.

In connection with the above case Wolff emphasizes the points that in cases of gunshot injuries near the spinal column where there is the slightest suspicion of injury to the vertebrae, the patients should be treated with a plaster cast or suspension. No dependence must be placed on the röntgen picture, for it does not show osteomyelitis in the early stages. Bullets and foreign bodies should not be removed through the oesophagus, but an external opening should be made and free drainage established. Osteomyelitis of the spinal column may not appear until weeks after the injury. A. Goss.

Davidson, T. C.: A Case of Gunshot Wound of the Back, Producing Paralysis, Relieved by Laminectomy. *Atlanta J.-Rec. Med.*, 1915, lxii, 71.

The patient, a negro, was shot in the back by a policeman. He presented complete paralysis of the bladder, bowels, and both legs. The X-ray report was misleading, from its having been incorrectly interpreted, the bullet having actually lodged on the left side of the second lumbar vertebra instead of on the right as reported. The question for diagnosis was whether the symptoms were caused by direct trauma of the bullet, by compression from a spicule of bone, or by a blood-clot. From a careful history of the relative position of policeman and patient at the time of the shooting and the fact that the patient did not immediately lose the use of his legs, it was concluded that a blood-clot was the cause, and this was confirmed by operation. The patient was up in fourteen days and recovered completely. The case serves to draw attention to the necessity of correctly interpreting X-rays and of using care in taking histories. C. E. WELLS.

Perthes, G.: Laminectomy in Cases with Bullets Lodged in the Spinal Cord (Über Laminektomie bei Steckschüssen des Rückenmarkes). *Beitr. z. klin. Chir.*, 1915, xcvi, 76.

There is still a great difference of opinion as to the proper course to pursue in gunshot injuries of the spinal cord; some surgeons advise operation and others, equally skilled, advise against it. Perthes considers only those cases in which the projectiles remain in the spinal canal, and gives the histories of six such cases operated upon by him. Two of these patients died the day after the operation; one died later after the wound had healed; one recovered from the operation, but not from the paralysis; but in the two other cases the improvement after the opera-

tion was so marked that there is every reason to believe it will be complete.

He discusses the symptoms of complete and partial transverse section of the spinal cord and concludes that laminectomy should be performed in all cases where there is only partial section. In such cases the symptoms are often due to pressure by the projectile, and recovery after operation is remarkably rapid and complete. If there is complete transverse section of the cord, operation is useless, but it must be borne in mind that there are often clinical signs of complete section when anatomically a part of the cord is preserved; so it is quite possible that some such cases may be saved; at any rate the operation can do no harm, for the patients will die if not operated upon. The operation should be performed under local anaesthesia with the aid of pantopon-scopolamine or scopolamine-morphine anaesthesia. In the cases of only partial section of the cord the operation should be performed at once; there is no object in waiting as the pressure symptoms will only grow worse.

A. Goss.

Marburg, O., and Ranzi, E.: Gunshot Injuries of Peripheral Nerves (Zur Frage der Schussverletzungen der peripheren Nerven). *Wien. klin. Wchnschr.*, 1915, xxviii, 611.

From experience with 2 non-operative and 48 operative cases of nerve injuries the authors come to the following conclusions:

1. When after a gunshot injury there is loss of motion and sensation and complete lack of electrical reaction, operation is indicated as soon as the wound has healed.

2. When there is loss of motion and sensation and the electrical reaction is growing worse, operation is indicated.

3. When there is loss of sensation and motion, with no tendency to improvement, and the reaction of degeneration remains stationary for several weeks operation is indicated.

4. If there are suppurating wounds operation should be delayed for several weeks. A. Goss.

Stoney, R. T.: Nerve-Suture for Bullet Wounds. *Brit. M. J.*, 1915, ii, 10.

As an operating surgeon in the French Army the author had many opportunities of seeing cases of nerve injury caused by modern weapons. From four operated cases he concludes as follows:

1. The function of a nerve may be interrupted without material injury, in which case the loss of function is only partial and returns early, probably within a fortnight or three weeks.

2. When a nerve is partially or wholly divided loss of function is marked and permanent and may even tend to increase. In these cases it is useless to expect spontaneous regeneration owing to the distortion and separation of the cut ends and the great development of dense fibrous tissue which appears to follow in all cases.

3. When a nerve is divided, the sooner an operation for its suture is performed the easier it is and the greater the likelihood of an early cure. In cases, however, where the wound is septic, it may be advisable to allow time for the wound to heal.

4. Even when no treatment has been given for several months there is still a chance of a successful result if late suturing is undertaken, so that no case need be looked upon as necessarily hopeless.

C. G. HEYD.

Holland, C. T.: The X-Ray Work at the First Western Base Hospital. *Med. Press & Circ.*, 1915, cl, 539.

Holland states that desperately bad cases are not usually seen in the base hospitals. Generally the wounds are those due to shrapnel bullets, bits of lead, or irregular pieces of metal. It is usually impossible to tell merely from the appearance of these wounds the nature of the missile causing them.

The first point to be determined by the radiographer is the presence or absence of a foreign body; its location; and the coexistence or not of a bone injury. The taking of plates alone is not sufficient but a careful and extensive search over a large area must be made with the screen before determining that a foreign body is not present. But even with a screen, when only splashes of lead are present, these may be so small that they cannot be detected on a screen. Holland thinks the best screen examination is made from below up, but states that owing to the condition of the patient it is usually very difficult to move the body freely and thus get screen or plate effects in various positions which are an aid to localization.

In dealing with methods of localization, Holland considers the Mackenzie-Davidson method the most exact known. The principle of this method is the taking of two radiographs with a known distance of tube from plate, the shifting of the tube a known distance, and then a reconstruction by means of the special apparatus of the lines of the X-ray stream, etc. For practical, quick execution, however, the author prefers a modification of this apparatus, devised by Hampson of London, which he describes in full detail. The method is claimed to be exact in determining the position and depth of a foreign body from any fixed and marked spot on the skin. Holland says that he has estimated the depth of deeply-seated foreign bodies in the pelvis and chest both from the front and back, put the figures on paper, and then with a caliper measured the thickness of the body between the two skin marks. In no single case has the difference between the sum of the depths and the caliper measurements been more than 0.5 cm.

In discussing the detection of bone injuries Holland states that a plate should always be exposed in addition to the screen. The plate will show more detail and in many cases will show fragments of lead mixed with the bone fragments.

He emphasizes the importance of thoroughly

skilled X-ray wound work. It is of no use leaving the work to semiskilled operators who are not familiar with the work required. Unskilled radiography is responsible for injury to the patient and misleading of the surgeon. He also thinks that the surgeon should be present at the examination and should see for himself the bullet shadow on the screen, the patient's position, etc. H. E. POTTER.

Jacomet: Treatment of Gaseous Gangrene (Notes et observations concernant le traitement de la gangrène gazeuse). *Bull. et mém. Soc. de chir. de Par.*, 1915, xli, 1321.

Jacomet at first treated severe cases of gaseous gangrene by amputation, but he found that even when he amputated above the gangrene in sound tissue, there was often recurrence in the stump. Now he treats these cases as follows: As soon as possible after the patient is received, parallel incisions are made in the gangrenous area 15 to 20 cm. long with the thermocautery; these incisions are made 6 to 7 cm. apart throughout the affected area. The thermocautery is passed through the skin and aponeurosis. He then dissects the cellular tissue with his finger or a blunt instrument, so that the muscles are opened up. He then washes out the wound with hydrogen peroxide, inserts gauze drainage, and wraps the limb in moist compresses. The dressing is repeated every day. If it becomes necessary to amputate a part of the limb he waits till a line of demarcation is formed, and incises the soft parts along this line with the thermocautery, and saws the bone. In this way he saves more of the limb than he would have by early amputation. By this method he has lost only one patient out of 11 and he insists on the value of the thermocautery.

DELBET said that he had found hydrogen peroxide positively harmful in gaseous gangrene; many cases, apparently very severe, turned out well, even without treatment, and others apparently mild ended fatally, so the method of treatment is blamed.

QUÉNU said that he did not believe Jacomet's treatment was applicable in all cases; in cases of total gangrene, amputation is necessary. He advises free incision in cases of partial gangrene and amputation in total gangrene.

TUFFIER thinks that hydrogen peroxide is effective in cases of subcutaneous gangrene, but not in deep gangrene. In the latter he recommends amputation. DELBET emphasized the importance of exposing the wound to the air. LENORMAND said he had never seen hydrogen peroxide arrest a case of progressive gangrene, and that, moreover, it is very painful to the patient. A. Goss.

Wepfer, A.: Intravenous Isopral-Ether Anæsthesia in Military Surgery (Die intravenöse Isopral-Aethernarkose in der Kriegschirurgie). *Beitr. z. klin. Chir.*, 1915, xcvi, 1.

Wepfer describes the technique of this form of intravenous anæsthesia. The complicated ap-

paratus described by Kümmel is not necessary. Three graduated flasks can be used provided with tubes that can be shut off at will. The first vessel contains physiological salt solution at 42° C., and the second a solution of 1.5 gm. isopral in 100 gm. lukewarm physiological salt solution. As the isopral is very volatile it should be prepared fresh each time from isopral tablets. The third vessel contains a mixture of ether and salt solution at 28° C. It must be no warmer or the ether collects above the salt solution and so is unused. Venesection is performed under novocaine infiltration, the needle being introduced into the median vein or into one of the veins of the leg. First the isopral is run in very slowly. If it is allowed to run too quickly there will be cyanosis and disturbances of respiration. When 70 to 90 ccm. of the solution, sufficient for one anæsthesia, has run in, the isopral tube is closed and the ether solution run in until the desired degree of anæsthesia is attained. The degree of anæsthesia is tested as in inhalation anæsthesia by the corneal reflex. In order to keep the anæsthesia at the desired point the ether is shut off from time to time and salt solution injected. The respiration should be watched carefully; it is somewhat more subject to disturbances than in inhalation anæsthesia. If there is any difficulty all that is necessary is to shut off the ether and use salt solution until normal breathing is restored.

Wepfer used this method of anæsthesia in two cases of severe gunshot fracture of the humerus and in one of the femur. In one of the cases he could not secure an anæsthetist, so he administered it himself. After the patient was anæsthetized, he allowed the salt solution to run in and went ahead with the amputation. This disproves the general opinion that this is a complicated and difficult method of anæsthesia. The patients awake from the anæsthesia feeling fresh and well, and there is no vomiting. It can be used on patients who are in extremely bad condition and not able to bear inhalation anæsthesia. In such cases it is an ideal anæsthetic and should be more widely used in military surgery, where desperate cases are frequent. If carried out with care it offers no more danger than inhalation anæsthesia. A. Goss.

Crile, G. W.: Notes on Military Surgery. *Ann. Surg.*, Phila., 1915, lxii, 1.

Crile describes his observations and experiences at the American Ambulance. He is full of praise for the sympathy and achievements of the self-sacrificing American men and women in charge. The hospital is under the War Department of France. It has a capacity of 450 beds, 150 of which constitute a university service under Joseph A. Blake of New York. Harvard University, the University of Pennsylvania, the University of Chicago, Western Reserve University and other universities have given assistance in money and personnel with the hope that American surgeons would become familiar with military surgery and help disseminate knowl-

edge of this branch of surgery, and incidentally prepare for eventualities in our own country.

The heads of wards and departments are professional nurses, assisted by volunteer auxiliary nurses among whom are artists, authors, actresses, and society ladies, who are spoken of as devoted to their work.

The orderlies are volunteers, assisted by students, artists, authors, and noblemen. One of these artists seems to have had time to mount in gold the missiles extracted from the wounded.

Crile is hopeful that the research work of the laboratories of Sir Almroth Wright and his staff at Boulogne and that of Alexis Carrel under the auspices of the Rockefeller Institute at Campiègne will yet develop useful methods of wound treatment in war. The Wright laboratory has already pointed out the shortcomings of dry dressings, and the efficiency of "warm moist dressings, immersion in hypertonic solutions of potassium citrate and sodium chloride and in severe knee or thigh injuries, the immersion of the patient in a bath." In the university division of the American Ambulance the open-air treatment of wounds, exposure to electric light, hot packs, immersion in hot water, free incision, good drainage, and physiologic rest were practised with success.

Gas gangrene. No specific treatment has been found for this fatal form of infection. Some favor the continuous oxygen infusion in the tissues beyond the infected area. Prompt amputation, leaving the stump wide open, and applying hydrogen peroxide yield favorable results in some cases; while free incisions and the actual cautery are resorted to by some surgeons.

Shock and exhaustion. As might well be expected in such a war, shock and exhaustion kill great numbers of soldiers. The emotional strain is especially great in men fighting in trenches but 50 yards apart. The strain reaches its maximum in those men who are wounded and lying in the zone of fire beyond rescue for many hours in the area between the first line of trenches of the opposing sides. Now that the troops are made up of seasoned soldiers the effects of emotional strain is not so deep or common, but in the earlier part of the war men were known to perish from emotional strain alone. Nervous systems break down where no injury has been inflicted and, as has been touched upon by military surgeons in the past, there are innumerable examples of profound shock and death from trivial wounds. The difficulties of treating shock are specially emphasized, as for instance at times when the relief corps are overwhelmed by the sudden appearance of thousands of wounded it is difficult to find assistants to even administer a drink of water. Under such stress shock is best treated by morphia.

Head injuries. These injuries are treated with difficulty as a result no doubt of infected head-wounds. Secondary changes such as abscess and epilepsy are common.

One of the excellent outcomes of the war has been

the practice of oral surgery by artful dentists in transplanting teeth, fashioning dental splints, and in bridge work.

Chest. Penetrating shrapnel and shell wounds nearly all end in empyema while rifle bullet wounds, as already reported from other wars, observe the same happy results in quick convalescence and return to duty.

Abdomen. Immediate operation from gunshot wounds of the abdomen which is the rule of treatment in civil practice, has ended disastrously in this war as it has in all previous wars. Cases of unexpected recovery, as already noted in military practice, were occasionally observed. Pelvic wounds involving shattering of adjoining bones were usually fatal after prolonged efforts at treatment.

Extremities. The experience in the World War is bringing to the attention of civilian surgeons the conditions which often compel military surgeons to amputate limbs in active campaign. High compound fractures of the femur with shattering call for the keenest judgment as to amputation, in view of the physical condition of the patient, the chances of transportation to a base hospital, the time to be spent in transit, the dangers of gas infection, etc. The same questions are apt to be debated in injuries to the leg below the knee, although in these the difficulties of transport are not so great.

The article is accompanied by a good illustration of the Balkan splint for fractures of the long bones. It is cheap and simple, and can easily be made by anyone. It dispenses with coaptation splints and bandages. In this splint the leg or arm is slung in a sling which is suspended from an overhead pole running from the foot to the head of the bed and fixed to two upright pieces. The usual method of making extension and counterextension is used in connection with the Balkan splint by raising the foot of the bed and fastening the pulley of the extension apparatus to the upright at the foot of the bed.

As might be expected, bone-plating for the treatment of fractures by gunshot is used but little.

Repair of infected compound comminuted fractures. Crile expresses renewed faith in the recuperation powers of Nature after seeing the unfailing repair of badly shattered fractures in long bones. We might state that military surgeons have persistently called attention to Nature's power to heal and to bridge wide gaps in the continuity of the long bones. It was so in wars in pre-antiseptic times and it is more so now that we can combat suppuration in and about the seat of fracture. Except for the emergency reasons that often compel military surgeons to amputate, conservation should be practiced whenever the nature of the injury lends hope of a useful limb. Under favorable environment amputation should never be contemplated except in the case of hopeless destruction of soft parts including the principal vessels and nerves of the limb.

In conclusion, Crile refers to the load that was suddenly thrust upon the medical departments of the armies involved at the commencement of the

war. The rule of furnishing armies a ratio of seven-tenths of one per cent or even one per cent of medical officers as an effective force proved inadequate and the number was a bagatelle as compared to the number actually required. In the beginning of the war when hundreds of thousands of wounded were suddenly flung here and there, there was much confusion. The army surgeons were fully occupied with administrative work which took all their time. Civilian surgeons of ability in clinical work had to take up the treatment of the sick and wounded and this they did nobly. To those of us who have had experience in active field work the lesson to be learned from this and all great wars is that civilized nations should ungrudgingly provide their armies with a liberal allowance of medical officers in time of peace in order that they may be properly trained for field service in war. If the medical officers seem to be too numerous and out of proportion to the number in other staff corps, the extra expense to which the nation is subjected will be outbalanced by the number of lives saved and millions of dollars saved annually in the way of pensions. We can excuse a heavy toll in life and suffering when it is due to the inevitable fortunes of war, but not when it arises from parsimony and neglect.

LOUIS A. LA GARDE.

Rothe, von: Surgery in a Military Hospital (Chirurgie im Kriegslazarett). *Beitr. z. klin. Chir.*, 1915, xcvi, 181.

Rothe thinks too much emphasis has been laid on the saying that war surgery is not peace surgery, and that war surgery must be conservative. These sayings may do harm by being wrongly interpreted. He points out some of the grave difficulties of military surgery; the buildings that have to be used for hospitals often are provided with neither light nor running water; water has to be heated on stoves, needed supplies are often not available, trained assistance cannot be counted on, and the time and attention cannot be given to each individual case that is thought necessary in civil practice. In spite of all these facts, however, war surgery is peace surgery, but must adapt itself to changed conditions. To say that war surgery is conservative must not be interpreted as meaning that the surgeon must do nothing. The most extensive incision is sometimes conservative in that it saves a limb from amputation. It is just as great a mistake to leave all projectiles untouched and let the right time for removing them pass by as it is to remove them all in a routine way without definite indications.

Operations on the different parts of the body are discussed, and insofar as general rules can be given for the treatment of certain conditions they are set forth. In gunshot injuries of the skull, grazing shots and those in which it can be seen from the relative position of the entrance and exit wounds that the projectile has passed near the surface of the skull are treated by laying bare the bone between the wounds and searching for splintering of the bone

and depression whether there is fever and high pressure or not. If there is neither splintering nor depression, further treatment is expectant. In cases where the bullet has penetrated the brain, whether it has passed out or lodged, a röntgen photograph should be taken. If the bullet has lodged there should be no operation if there is no fever. Indications for operation are: increasing cerebral pressure or persistent high fever.

In gunshot injuries of the lungs the principles are: rest in bed and expectant treatment. Only if there are threatening symptoms of compression, should there be early, partial evacuation of an extensive effusion; otherwise partial evacuation after 10 days. If there is effusion with high temperature it must not be forgotten that the latter may be caused by a puncture. Rib resection should be performed only when empyema of an abscess is demonstrated, if there is not already complete pneumothorax. If a shot goes through both thorax and abdomen, the treatment is the same unless there are pronounced abdominal symptoms.

In gunshot injuries of the abdomen in civil life laparotomy should be performed as soon as possible. This rule does not hold good in war surgery for it is impossible to get the patients where they can be operated upon aseptically soon enough. The best time for operation has passed before operation is possible, so the surgeon must wait until sufficient adhesions are formed to shut the injured intestine off from the peritoneal cavity. But if there is perforation, operation should be performed anyway, for otherwise these cases are absolutely fatal, and even if only a few are saved it justifies surgical interference.

The principles of treatment followed in injuries of the urinary tract are as follows: (1) If there is continuous internal hæmorrhage, operate at once. (2) If there is injury of the kidney without this symptom, expectant treatment should be used. (3) In injury of the bladder permanent catheterization is necessary. (4) If it is suspected that the prostate also is mutilated, if the catheter becomes clogged, or if, in spite of the catheter, there is high fever, operation with formation of a vesicoperineal fistula, or high section, or possibly both are indicated.

In injury of any of the three body cavities a fundamental condition for success is absolute rest and no transportation before the sixth to the tenth day.

In injuries of the spinal column immediate fixation is of the greatest importance. When possible a röntgen picture should be taken. If bone splinters or projectiles are shown in the picture the injured point should be laid bare and the foreign body extracted. This is in contrast with the advice of most authors, but Rothe has had excellent results. If the cord is only contused expectant treatment is in order. Infected wounds should be opened and drained. The patients should not be transported till the eighth or tenth day.

Injuries of the limbs constitute the majority of

war injuries. The greater part of them are infected. Incision should be made parallel to the muscle-fibers and the canal of the projectile drained. There should be complete fixation of fractures as soon as possible. The author has devoted special attention to learning to apply plaster casts rapidly; in fractures of the femur a cast can be applied from the foot to the pelvis in ten minutes. There are very few amputations in proportion to the number of injuries of the extremities. Amputation is performed only if there is such extensive destruction of bone and soft parts that restoration of continuity is hopeless — this rarely occurs — in gangrene from injury of vessels or too firm bandaging, and in severe progressive infections, such as tetanus and gas phlegmon.

He emphasizes the importance of having the best means of transportation, and giving the strictest care to the first dressing of the wound. A. Goss.

Goebel: Mistakes in Military Surgery and How to Avoid Them (Äerztliche Fehler bei Ausübung der Kriegschirurgie und ihre Vermeidung). *München. med. Wchnschr.*, 1915, lxii, 829.

There is a great deal of carelessness in carrying out asepsis. Many surgeons rely too much upon rubber gloves. They put on a pair of sterilized gloves and then do all sorts of things, such as removing dressings from infected wounds and opening doors; after each act they wash their hands in a bichloride solution that has been used over and over. It would be much better not to depend on sterilized gloves or hands at all, and handle everything with sterilized forceps. This saves the hands also. When the dressings are too voluminous to be removed entirely with forceps a nurse should be called to remove the outer ones. The part of the dressing next to the wound should never be touched with the hand. Gloves are often ruined by not having enough powder put in them before they are sterilized. The best way is to draw the glove over a well-powdered lisle glove before sterilizing, and leave the lisle glove in it until it is ready to put on. No impermeable material should ever be used for a dressing. When moist dressings are used care should be taken to see that they are not too wet. When a dressing is applied circularly it may constrict the limb after it becomes soaked with blood.

Another mistake that is often made is to immobilize healthy joints; for instance, in a wound of one finger all the fingers may be immobilized. Ankylosis has been produced in many uninjured joints in this way. If the femur is fractured of course the hip, knee, and ankle have to be immobilized, and incidentally, the immobilization of the ankle is often neglected; in a fracture of the leg, the knee and ankle must be immobilized, but in fracture of the femur the shoulder should be left free to some extent. In fracture of the forearm the arm should be immobilized in supination.

Too little attention is paid to immobilizing joints in the position that will be best for their functioning later. Slight dorsal flexion is much better than extension for the wrist, or even volar flexion. The elbow should be flexed at a slightly acute angle; the shoulder should be kept in abduction. The tendency of the thigh to rotate outward is seldom sufficiently considered. The ankle should be kept at a right angle.

Plaster casts are very useful, but they should always be fenestrated to provide for dressing the wound. A glass or cup fastened over the site of the wound is an aid in making a fenestrated cast. Many surgeons do not use heavy enough weights in extension for fractured femur. Goebel advises a weight of over 20 pounds, and says that the foot of the bed should be raised 15 cm. higher than the head. Care should be taken to keep the patient from sinking too deep into the mattress. Extension should be applied in a position of semiflexion. Active and passive movements of the joints are often neglected. If the surgeon cannot find time for them he should instruct a nurse in carrying them out. Baths and hot-air apparatus should be more generally used. Slight chloroform anæsthesia should be given when dressings are very painful. Injuries of the jaw should be sent to a specialist as quickly as possible. In the way of prophylaxis antitetanus serum should always be given, especially when the soldiers have been fighting in a wooded region, and urotropine should be given in all cases of brain injuries, to prevent meningitis. Autopsies should be performed more frequently — just as often as time can possibly be found for them, for every autopsy gives some information of future value. A. Goss.

EXPERIENCES OF GERMAN SURGEONS IN THE FIELD¹

BY COLONEL LOUIS A. LAGARDE, MEDICAL CORPS, U.S.A., RETIRED

THE following notes are taken from the report of the annual meeting of the *Deutsche Gesellschaft für Chirurgie*, which was held in Brussels, April 7, 1915.

GARRÉ stated that the arrest of hæmorrhage should be effected by tampons or the bleeding vessels seized by hæmostats covered with bandage, and permanent ligature applied later. The use of elastic bandages should be avoided as much as possible since they are not under the control of the surgeon at all times. The coagulability of the blood is best increased by intravenous injections of a 7.5 per cent solution of iodine chloride. Loss of blood is best combated by autotransfusion, plus the use of stimulants. The blood-pressure sinks after saline transfusion very rapidly and otherwise impairs the vitality of the much exhausted patients, causing death at times. All skull wounds including tangential traumata should be trephined, large openings being avoided. Small trephine openings are also indicated in intracranial hæmatomata; ligature of the middle meningeal is not always called for in the latter.

Severe emphysema is treated by multiple incisions when it cannot be arrested at its source; tracheotomy is seldom required for wounds located in the mediastinum, neck, and lungs. A large dose of morphine acts very well to tide the patient through the critical stage of the more severe cases of surgical emphysema. Severe hæmothorax is best treated by rest and morphine. Dyspnoea and other pressure symptoms in chest wounds are best relieved by puncture. Gunshot wounds of the abdomen were operated upon only when facilities for operation were at hand before the expiration of 12 hours. The earlier the operation the greater is the percentage of recoveries.

Operation is specially indicated in wounds of the stomach and intestines, and those indicating the continuance of hæmorrhage. Wounds of the intestines call for a median incision; perforations should be closed, resections practiced when necessary, and the entire intestinal tube should be carefully examined. Wounds of the urinary tract and perineum were best treated by simple puncture of the bladder with a cannula 10 cm. in length, the size of a knitting needle, which was left in place when occasion required. This mode of relief eliminated external urethrotomy, a difficult operation in the field. Infiltration of urine was treated in the usual way by free incisions.

SHELL WOUNDS

The chemical injury to the tissues, the presence of foreign matter, and the retraction of severed muscles which serves to aspirate dirt and other extraneous matter into the wound, make shell wounds

difficult to treat. Pockets made by the low velocity of primary and secondary missiles contain devitalized tissues which favor the development of pyogenic bacteria. Suppurations of all kinds including gas bacillus, gangrene, and tetanus are prone to occur in such wounds. The best treatment is thorough exploration of all pockets with gloved finger, trimming the wound, establishing free drainage, and washing with mild antiseptics. These mutilated wounds are best treated at the front by conservation. Amputation, if necessary, should be deferred to an opportune time at a well equipped dressing station. The shock of amputation only adds to existing shock and increases the mortality in such cases. Injuries to the cranium and abdomen should be assigned to the skillful surgeon.

FIRST AID AT THE WEST AND EAST FRONTS

FRIEDRICH insists that the choice of treatment depends on the question of transport which differs materially at the two ends of the line. At the east front transport is unsatisfactory. At dressing stations the treatment includes first-aid dressings, fixation of fractures, and arrest of hæmorrhage by hæmostats rather than by ligature. There is great difficulty in reaching the wounded due to the fire from the enemy. In field hospitals, amputations, exarticulations, and formal ligature of vessels are performed. Shell wounds are attended with suppuration, and experience shows that better results are obtained by prompt amputation than by conservation. Amputation for phlegmon does better after circular incision than after flaps are made. Dressings should be removed promptly on arrival at field hospitals to detect commencing phlegmon.

SEVERE HÆMORRHAGE FROM WOUNDS

The experience of 178 surgeons with regard to hæmorrhage from wounds was related by REHN in brief as follows: Severe hæmorrhage is infrequent. Shell wounds conduce to hæmorrhage more than rifle, ball, and shrapnel projectile wounds. Of 421 severe cases of hæmorrhage about 50 per cent required ligation. The order of frequency of arterial wounds was brachial, femoral, radial. In the field hospitals ligatures were applied in 72 out of 188 cases of hæmorrhage, the point of election having been selected in 22 cases. Much harm was done in the early part of the war by the application of improvised tourniquets, such as straps, belts, etc., to arrest hæmorrhage, by soldiers in cases which did not require constriction and in others in which pressure was too long continued. Wounded men having tourniquets in place should have some distinguishing mark to arrest the attention of the surgeons while in transit to the rear.

¹ Berl. klin. Wchnschr., 1915, May 24.

TETANUS AND GAS GANGRENE

KÜMMELL places the frequency of tetanus at 0.6 to 0.65 among the wounded in the region of the Aisne in which the soil is badly contaminated. In 350 recorded cases the mortality was as high as 70 per cent. Cases at the front were more fatal than those noted at the rear. Out of 125 cases in a Hamburg hospital the mortality was but 25 per cent. The latter were lighter cases, with longer incubation periods. In August and September the disease became frequent, with a short incubation period and a maximum mortality of 100 per cent. In October the frequency of the disease declined, and it practically disappeared between November and January. Dysphasia was an early symptom. As already reported, prophylactic treatment was very satisfactory. When possible, serum injections of 20 units were administered to every wounded man in the trenches. In Hamburg the practice of giving large doses of serum combined with old salvarsan yielded good results. Serum injections although given in large doses seldom proved of benefit after the onset of symptoms. Magnesium sulphate relieved painful spasm, as also did morphine, chloral, and scopolamine in large doses.

Gas gangrene is attributed to Fränkel's bacillus. Early diagnosis is of the greatest importance. The skin acquires a coppery color, with swelling and emphysematous crackling on pressure. The discharge contains gas bubbles. Life and limb are often saved by early treatment consisting of free incisions and application of hydrogen peroxide to the open wound. When gangrene has already supervened the only treatment is by amputation, employing either flaps or sutures. Kümmell does not favor excision of wounded tissues early in all cases to prevent the development of gangrene and tetanus, a procedure which often hampers the uncomplicated recovery of many cases. A rise in temperature is indication for opening up a wound and removing lodged missiles. In the discussion of Kümmell's paper it was pointed out that infection from the bacillus *aërogenes capsulatus* develops within four days after the injury; the infection develops five times more frequently in the lower limbs than in the upper. The blood is not infected with bacteria, except in fatal cases when the causative agent is readily found by staining in the blood of the heart.

WOUNDS OF THE CHEST

SAUERBRUCH found the proportion of chest wounds to all others to be about 27 per cent, exclusive of the cases which died on the battle field, the latter representing 30 per cent of all chest wounds.

BORST found the prognosis of chest wounds favorable under complete rest and morphine. The usual mortality was about 12 per cent. In cases with foreign bodies carried in the chest, such as fragments of ribs or missiles, the mortality reached 24 per cent. The treatment of infected hæmothorax was by repeated aspiration after which the

temperature drops. Resection of rib was not considered necessary. When the chest was penetrated in the axilla in the region of the seventh and ninth ribs, whether by bullet or shell fragment, the abdominal cavity was usually involved and all such cases required operation. He has seen 82 such cases with 72 deaths in a field hospital. By operating promptly in this class he was able to save 10 out of 14 cases which came under his care.

BORCHARD makes it a rule to withdraw effused blood from the pleura as soon as pressure symptoms are no longer necessary to stay hæmorrhage. Transport should be delayed in all chest wounds. A wound of the lung is apt to become infected as late as two weeks after injury by disturbance in transport. Sixty per cent of deaths from chest wounds may be ascribed to infection, and 5 per cent to hæmorrhage.

WOUNDS OF THE SKULL

Gunshot wounds of the skull at close range were fatal in the majority of cases immediately after the receipt of the injury or during transport. Nearly all the cases observed were inflicted by bullets of low velocity. When the entrance and exit wounds were small the rule was to apply an antiseptic dressing; and when the exit wound was large the wound was explored, pieces of loose bone and foreign matter were removed, the surface of the brain was sponged, and a tampon was applied. In the absence of good facilities for operating the author favors conservatism in the management of these cases. He had 18 recoveries in as many severe penetrating wounds of the skull when treated by cleansing and sterile dressings. Necropsy invariably showed the presence of infection from the lack of proper surgical care. Removal of lodged missiles is favored when properly located by the röntgen rays, as retention of the missiles favors development of infection. The most common wounds requiring treatment are tangential shots delivered at close range. In these cases there is extensive fracture of the brittle inner table and a tendency to drive spicules of bone into the brain substance with resulting suppuration and its after-effects, such as paralyses, pressure symptoms, etc. The furrow made by the bullet is exposed, all detached pieces of bone removed, and a loose dressing subsequently applied. A word of caution is given to beware of apparently trivial skull wounds, such as those occurring from ricocheting or low velocity shots. These may only inflict an indentation on the skull with no apparent injury within. Nevertheless, cerebral symptoms are apt to arise in such cases, and as soon as they do the bone and dura should be exposed and search made for the point of pressure.

WOUNDS OF THE ABDOMEN

KÖRTE's remarks on war wounds of the abdomen are of special interest: The prognosis of all operated cases is very much influenced by the length of time which elapses between the receipt of injury and the

operation. The prognosis is very bad after 12 hours, especially if the patient has been transported over rough roads meanwhile. Of the 312 cases reported but 2 were inflicted by bayonet, the remainder were by bullets. Two hundred and seventy-four of these cases reached hospital care alive, and 38 died. Out of the 274 cases reaching the hospital, 121 recovered and 146 died; the result in the remainder is not given. In 17 severe cases with protrusion of the intestine or omentum operative relief was practiced in every case with only two recoveries. Of 257 cases admitted to the hospital from the sixth to the eighth day and treated expectantly the mortality was 51 per cent and recoveries 47 per cent. In 10 cases subjected to secondary laparotomy for prolapse of the omentum or abscess, 6 died and 4 recovered. Necropsies demonstrated that in a number of the cases previously operated upon, perforations of the intestines and other organs had been overlooked. There is much diversity of opinion among German surgeons as to the merits of operative and conservative treatment of abdominal wounds. Recently there seems to be a greater tendency in favor of operation.

ROTTER, whose operative experience had been unfavorable, recorded 6 consecutive recoveries after operation under favorable conditions. In cases in which intestinal perforations are present, he considers operation is indicated within 12 hours if the patient has not been disturbed by transport for any great distance, and when the condition of the patient and the environments are generally favorable.

SCHMIEDEN gave his experience which was confined to trench warfare entirely. The prognosis in gunshot of the abdomen was worse than that observed in wounds of the chest and skull. The belief that the intestinal mucosa forms a plug to close the perforated gut he believes is hardly tenable. Such a condition might have been obtained in wounds inflicted by the Japanese bullet, but it is not true of the abdominal wounds with the present armament. When abdominal wounds recover now, the intestines and stomach have very likely escaped injury. Transport cannot be avoided and conservative treatment cannot be satisfactorily carried out. Laparotomy is permissible within 12 hours when the patient's condition is favorable and when facilities for operation are good. In 198 cases it was estimated that the gastro-intestinal tract had been perforated in 157 cases. Of 58 laparotomies death occurred in 37 cases; 16 recovered; the outcome in the remaining 5 cases is unknown. Of 94 cases treated conservatively but 4 recovered. He estimates that abdominal wounds uncomplicated by intestinal perforation recover in 50 per cent of the cases. Wounds of the liver with large external wounds should not be closed. Free drainage favors escape of damaged liver substance and prevents retention abscesses.

FRIEDRICH spoke of the mortality from abdominal wounds at a first dressing station, a field hospital,

and a home hospital. In 33 patients at the dressing station the mortality was 44 per cent in the first 24 hours, and 85 per cent at the end of 2 days from the time the injury was received. Only 5 of the original 33 patients survived. Thirty-four cases were treated on conservative lines at a field hospital, with a mortality of 32 per cent. Forty-eight were treated at a home hospital, with a mortality of 38 per cent.

OPERATIONS FOR ABDOMINAL WOUNDS

ENDERLEN reported 30 recoveries out of 85 laparotomies for gunshot wounds from bullets, shrapnel, and shell fragments. Three cases necessitating resection of part of the intestine were saved. In 5 cases in which the points of entry and exit of the bullet indicated perforation of the intestinal area, no lesion of the intestine was found and there was recovery in every case. In cases operated upon in the early part of the war from 18 to 24 hours after the injury, he found purulent peritonitis but no adhesions of abdominal organs, nor mucous plugs in the intestinal perforations. Death followed in all cases of prolapse of abdominal organs.

SAUERBRUCH is a firm believer in laparotomy for gunshot injury. He saved 23 out of 54 cases operated upon.

IMMOBILIZATION BY PLASTER OF PARIS

GOLDAMMER advises against the use of plaster of Paris for fracture at the extreme front. He thinks it is safer to use it at points on the line where patients can be under constant observation. Up to such a time the surgeon should be satisfied with more simple means of fixation.

SURGERY OF BLOOD-VESSELS

BIER reported 102 operations for aneurisms. Recently 28 arteriovenous aneurisms were observed out of 33 aneurisms of the femoral artery. Varicose aneurisms were rare. Of the 102 aneurisms under consideration the length of time preceding operation was from eight days to five months. The aneurism generally develops early after the receipt of injury, and less frequently much later. In all cases the sac is dissected out after the artery has been thoroughly exposed. Unless the last precaution is observed much of the artery is sacrificed in dissecting the sac, so that arterial suture is unsatisfactory. Suture was performed in 74 of the 102 cases. Operation for arteriovenous aneurisms was more difficult. Thorough preliminary dissection was especially indicated in such cases; venous transplantation was unnecessary and superfluous. Momburg's method of inducing anemia of the limb was employed. Sepsis contra-indicates suture of blood-vessels as it promotes danger of secondary hemorrhage later. Suture of smaller arteries is not recommended as they are better treated by simple ligation. Eight of his 102 cases died, 4 of the deaths occurring among 9 cases of aneurism of the subclavian artery.

GYNECOLOGY

UTERUS

Hutchins, H. T.: Limitations of the Radical Operation for Cervical Cancer of the Uterus. *Boston M. & S. J.*, 1915, clxxiii, 97.

The author states that he thoroughly believes in the radical operation for cancer in the early cases, but makes a plea for better selection of the cases in which it is attempted.

The necessity of early diagnosis is generally known, but as many physicians are lazy or careless this doctrine should be continually preached. There is no scarcity of surgeons capable of performing the radical operation, but there is a great difference of opinion as to what cases are suitable for this operation.

When a radical operation is attempted and all the growth is not removed, the patient's condition is frequently worse than before operation, from vesical, rectal, or ureteral fistulæ. An exploratory laparotomy is frequently necessary to determine what cases are suitable for the radical operation.

If the base of the bladder is involved, if the rectum is involved, if the growth extends laterally to the wall of the pelvis and surrounds the ureter, and if the iliac glands are involved, only a minimum of these cases will be cured by radical operation and a large number will be left in a hopeless condition.

In these cases, Hutchins advises ligation of both internal iliacs, with thorough cauterization of the mass with slow heat after the technique of Percy. The cauterization may be repeated if necessary.

Hutchins has the following to say in conclusion: "The campaign for the early examination and diagnosis of cancer must be continued with vigor and the radical operation performed on all such cases, but in the cases where the early diagnosis has not been made, and those form a large group at present, let us adopt measures which give the maximum of relief and comfort for the remainder of life and the minimum of mutilation, rather than carry the radical procedures to such unfortunate, unfruitful, and unsurgical extremes. If we cannot do good let us not do harm and thus bring discredit on radical surgery and attempt to ease our consciences by the plain falsehood that 'we have given the patient her only chance.'"

S. A. CHALFANT.

Cobb, F.: The Surgical Treatment of Cancer of the Cervix Uteri. *Boston M. & S. J.*, 1915, clxxiii, 85.

Cobb reviews a series of 420 cases of cancer of the uterus treated at the Massachusetts General Hospital from 1900 to 1914 inclusive. During this period he performed extensive hysterectomy 42 times

in 98 personal cases with an average mortality of 12.5 per cent. By extensive hysterectomy the author means the Wertheim abdominal hysterectomy plus certain modifications of his own. He devised a new technique for removal of the vagina and rectum when these organs were involved; the internal iliac arteries were tied as a step in the palliative operation, and the lymph-glands were removed when enlarged to sight or palpation. During the last six months the method of Percy has been followed in the use of the cautery. Cobb was able to trace all of his cases and of the 116 patients surviving various kinds of hysterectomy by his associates, all but 10 were traced. The need of educating the public and profession to early recognition of uterine cancer was emphasized by the high percentage of inoperability. Of the Massachusetts General Hospital cases, 4 refused operation, 63 were totally inoperable, 201 could have only a palliative operation—an operability of 36.1 per cent.

Cobb states that the advanced cases are too often neglected and believes that ligation of the ovarian and internal iliac arteries is a valuable means of stopping pain and hæmorrhage in these advanced cases. Previous to becoming familiar with the method of Percy he had been ligating the internal iliac arteries and then using the curette to remove diseased tissue and charring with the cherry-red cautery iron. Including the cases done by the Percy method, he has ligated the internal iliac arteries 23 times with no immediate mortality. Cobb believes that Percy's method is the one of choice in borderline and advanced cases and that the moderately advanced cases which in the past have been operated upon radically, should have the Percy method used first and an abdominal hysterectomy done later.

Regarding the decision as to which cases should receive radical operation, the author states that while such cases as have the entire pelvis filled with a hard mass and the vagina markedly involved must be considered inoperable, there are numerous cases in which no bimanual examination with or without anæsthesia can positively determine that it is inoperable because fixation of the uterus and indurated masses in the pelvis are not infrequently due to inflammatory lesions. In such cases an exploratory laparotomy is necessary to settle the question of radical operation and since the Percy treatment requires opening the abdomen, the case if inoperable is ready for his treatment. After opening the abdomen, the peritoneum should be split and the great vessels laid bare. If large nodes are felt in the sacral chain the radical operation is inad-

visible. Moderate involvement of the iliac and obturator groups does not contra-indicate extended hysterectomy.

Analysis of all cases of cancer of the uterus, both of the cervix and body, at the Massachusetts General Hospital from 1900 to 1914 inclusive:

Total number of cases.....	420
Personal cases of Dr. Cobb.....	98
Refused operation.....	4
Inoperable.....	63
Palliative operations.....	201
Vaginal hysterectomies.....	19
For cancer of cervix.....	14
For cancer of fundus.....	5
Abdominal hysterectomies.....	133
For cancer of cervix.....	104
For cancer of fundus.....	20
Operability.....	36.1 per cent
264 came too late.	

Analysis of the radical (Wertheim) hysterectomies at the Massachusetts General Hospital from 1900 to 1914 inclusive:

Total number of cases.....	55
Immediate mortality.....	12 or 21.8%
Surviving cases.....	43
Traced.....	43
Operated on over 5 years ago.....	14
Alive and free from recurrence over 5 years.....	7 or 50%
Alive and free from recurrence over 3 years.....	12

Analysis of personal cases of Dr. Cobb at the Massachusetts General Hospital from 1900 to 1914 inclusive:

Total number of cases.....	31
Immediate mortality.....	5 or 16.1%
Cases traced.....	All
Operated on over 5 years ago.....	6
Alive and free from recurrence over 5 years.....	7 or 83%
Alive and free from recurrence over 3 years.....	10

W. H. CARY.

Anspach, B. M.: The Treatment of Advanced Carcinoma of the Cervix with Radium. *Am. J. Obst.*, N. Y., 1915, lxxii, 97.

The author gives a brief history of the five cases he has treated with radium, all of which are still under observation and all but one recent, and gives the following conclusions:

1. Treatment by radium must be reserved for those cases of carcinoma of the cervix in which removal by operation is out of the question. Radium will cure an undetermined percentage of the inoperable cases, and give the stricken people formerly condemned to die a new hope.

2. The therapeutic effect of radium is probably analogous to the therapeutic effect of the X-ray. Only radium can be placed directly in the diseased tissue overcoming some of the mechanical, difficulties of X-ray treatment for these cases.

3. With few exceptions, up to the present time radium has not been properly used. It must be exhibited in massive doses, and the case must be kept under observation until the local subjective and objective symptoms have disappeared.

4. In order to avoid deception in regard to radium treatment of all sorts, the collection of radium should be limited to hospitals and public institutions, and the existence of all radium supplies should be registered in the Department of Public Health.

C. H. DAVIS.

Massey, G. B.: Two New Electrical Methods. *Am. J. Obst.*, N. Y., 1915, lxxii, 56.

Some twenty years ago the author began to use a unipolar method for the ionic destruction of carcinoma of the cervix, with the patient under a general anæsthetic. He has found the following changes necessary:

1. The inclusion of both poles within the edges of the growth, the negative as a single electrode in the center and the positive as multiple points in the periphery, thus absolutely controlling the spread and depth of the action save for the slight amount of power that curved outward.

2. The abandonment of mercury and the use of more slender zinc instruments, thus increasing the ionic destruction per unit of current and avoiding the brittleness and clumsiness of mercury-coated instruments.

3. In carcinoma of the cervix, the division of the treatment into several applications, separated only by the time necessary for the separation of the sloughs produced, a time varying from six to eighteen days. This latter change allows the operator to judge quite accurately as to the effects of the previous application and to gauge subsequent applications more intelligently.

Assuming that sagging and displacements of the hollow viscera of the abdomen is partially due to lack of muscular tone, it is evident that repeated electrical stimulation of the structures will be valuable and at times curative. While the idea is not new there have been difficulties in its application for three reasons: (1) Faradic currents have been used instead of galvanic. (2) The electrode skin contacts have not been made sufficiently perfect with moist kaolin or clay pads to get enough current through for the work. (3) This muscle power, so to speak, has not been pumped into patients for sufficiently long periods to obtain the best results, without fatigue on the part of the operator.

The author advises a sinusoidal reversal of the galvanic current, slowly made, as the most effective in visceral ptoses and the abdominal form of neurasthenia.

C. H. DAVIS.

Newcomet, W. S.: Uterine Carcinoma Treated by Radium. *N. Y. M. J.*, 1915, cii, 19.

The author refers first to the fact that a certain number of carcinomata of the uterus are more or less symptomless until they have gone past any operative stage.

The author bases his discussion upon deductions from some 50 cases of advanced carcinoma. As these patients were all in the advanced stage of the disease, past any operative procedure, it would be impossible to give an absolutely correct list of ultimate results.

He divides his cases into the following divisions: (1) patients who left while under treatment; (2) those still under treatment; (3) those who died either while under treatment or shortly afterward; (4) unimproved (left the institution and have been

lost sight of), no doubt most of them have died; (5) improved; (6) greatly improved (where the disease process disappeared and was not detectable upon local examination).

He details some of the more interesting cases, and states that radium did not seem to have such special influence upon any one case that it required a distinctive classification.

No doubt the temporary improvement is, in most instances, due to the recuperation of the system because the bleeding has been temporarily abated. Even where there is little local improvement, hæmorrhage and discharge are often lessened.

Fever, due to the absorption of these toxic products, is lessened and temporary improvement is noted. This gives rise to a general feeling of well being, and the patient believes that the growth of the disease has been checked.

In many instances where radium was used, pain was relieved. Still there was a large proportion of cases in which it failed to have any influence whatever, and furthermore, some patients complained of increased pain after the applications, this too in some in which it had a marked beneficial effect.

A number of patients showed a decided increase in mental excitement, loss of sleep, and in three instances developed what might be recognized as acute mania.

The amount of radium used in each case was from 10 to 40 mg. element contained in small tubes, and these surrounded with aluminum and lead, depending upon the condition of the tissues. Gauze was then placed about the metal, and this in turn covered by a rubber, celluloid, or glass tube. After the applicator was completed, it was placed within the vagina (rarely within the uterus) for three, four, or even eight hours daily, every other day, or even at longer intervals to suit the demands of the individual case.

D. C. BALFOUR.

Percy, J. F.: Inoperable Uterine Carcinoma; a Method of Applying Heat in Its Treatment.
Boston M. & S. J., 1915, clxxiii, 93.

The author's treatment is based upon the laboratory evidence that carcinoma cells cannot be successfully transplanted after they have been exposed to a temperature of 113° F. (45° C.) for ten minutes. He insists that it is not a cautery operation, as high degrees of heat carbonize the tissues and prevent penetration.

The abdomen is opened and the extent of the growth determined. The intestines are packed off with a large piece of baby flannel wrung out in a 2 per cent solution of sodium citrate in normal salt solution, to prevent adhesions. The internal iliac and ovarian arteries are ligated and the mass grasped in the hand. Then through a water-cooled vaginal speculum the heated iron is introduced through the vaginal or cervical mass to the fundus of the uterus and held there until everything abnormal is too hot to hold in the hand covered with a medium-weight rubber glove; this treatment is continued in

other directions until all the fixed carcinomatous tissues are freely movable.

Percy has operated upon 50 per cent of his cases two or more times and on two of them five times. He advises after-treatment by X-ray with the Coolidge tube, but is not sure that a later radical operation is advisable.

S. A. CHALFANT.

Pfahler, G. E.: Röntgenotherapy in Uterine Fibroids and Uterine Hæmorrhage. *Am. J. Obst.*, N. Y., 1915, lxxii, 79.

The author was one of the first to use röntgen rays in the treatment of uterine fibroids, and bases his paper upon nine years' experience and a total of 46 malignant cases treated in that time.

He gives the following indications for treatment of hæmorrhages due to myomata: (1) all cases of myomata in older women in whom there is already a well-advanced anæmia, which may be the cause of an anæmic heart; (2) all elderly and young women with myomata in whom there is marked organic heart-disease, diabetes mellitus, chronic nephritis, marked lung disease and goiter with cardiac symptoms; (3) all patients beyond the age of 40, in whom there is no contra-indication to the treatment. In general the older the patient and the nearer she has approached the menopause the more prompt and satisfactory will be the result. Under 40 it is not the treatment of choice, but good results can be obtained, though the younger the patient the more treatment will be required.

The contra-indications are: (1) all cases of myomata in which the tumor is pedunculated, or which can be excised without destroying the reproductive powers of the patient; (2) fibroids that have undergone malignant degeneration or that have become gangrenous; (3) fibroids associated with disease of the adnexa; (4) fibromata which are producing such marked symptoms that the patient is endangered more by waiting two or three months for the results of the röntgenotherapy, than by the result of an operation.

The author points out that with the improved technique worked out by Gauss hæmorrhage has been controlled in practically every case, and even with the smaller dosage has returned in only three or four per cent of the cases. In his own experience 75 per cent of the tumors have disappeared. While a study of the published reports show that a few malignant tumors have been discovered during the course of the treatment, there are no reports of malignant disease having developed in over 1,500 cases which were treated at least long enough to have been placed on record. Should complications arise during the course of the treatment there is nothing to prevent an immediate operation. Because of the control of the hæmorrhage the patient's condition will be better and she will be better able to stand the operation.

He draws the following conclusions:

1. Röntgenotherapy must be looked upon as a very efficient adjunct to the gynecologist's armamen-

tarium, and while he believes that the rays should be applied by the röntgenologist, the röntgenologist should work with the gynecologist.

2. Deep röntgenotherapy stops the hæmorrhage associated with uterine fibroids. This is followed by the gradual disappearance of the tumor. This atrophic change may extend over several years and continues long after the cessation of treatment.

3. The treatment of metropathic treatment is almost uniformly successful.

4. Uterine hæmorrhage occurring at the menopause, when not malignant, will usually respond very quickly.

Some good results can be obtained in inoperable carcinoma, and the deep rays should be used in all cases operated upon for carcinoma.

C. H. DAVIS.

Ashby, T. A.: A Clinical Study of Uterine Hæmorrhage. *Old Dominion J.*, 1915, xxi, 21.

The author believes that the borderline between the physiological and the pathological function of menstruation is often so narrow that much confusion exists and the clinician is left in doubt as to the proper consideration of the condition. From the clinical point of view, there are many indefinite symptoms relative to excessive uterine bleeding that do not receive proper attention and thus the doorway is opened to ill health and the way paved for the development of serious organic diseases.

Usually the causes of excessive uterine bleeding are not difficult to determine if the physician would only take the trouble and time to investigate the existing symptoms. A physical condition will almost always be found to explain the symptoms.

The most important points from the author's study of uterine hæmorrhage are:

1. Uterine hæmorrhage is much more common than is generally supposed.

2. It is a cause of impaired health in many women, and more frequently in the childbearing than in the non-childbearing.

3. In the vast majority of cases it is the initial symptom of uterine neoplasms and of cancer of the uterus.

4. Excessive flow of blood at the menstrual period should be investigated and the cause determined.

5. An early diagnosis of the cause of any abnormal uterine bleeding is of the utmost importance.

HARVEY B. MATTHEWS.

Lange, S.: A Preliminary Report of the X-Ray Treatment of Menorrhagia and Uterine Fibroids. *Lancet-Clin.*, 1915, cxiv, 59.

In Lange's series of 20 cases, 8 were treated for menorrhagia, 7 for fibroids of the uterus, and 5 for dysmenorrhœa.

The patients treated for menorrhagia varied in age from 19 to 47 years. All were chronic cases and all had been curetted several times without benefit. Several were very weak from blood loss. Treat-

ment was administered as a rule once a week. The greatest number of treatments given in any case was eight. In 7 patients the bleeding was stopped and an artificial menopause established. Such a result was secured in a girl of 19. Many of the patients had a temporary increase of flow during the first few treatments. Where the menopause was not desired, the menorrhagia was controlled without complete cessation of the periods.

Lange considers the X-ray treatment to be futile or indeed contra-indicated in the pedunculated submucous type of fibroids. The 7 cases of his series were the intramural or subserous type. The menopause was established in 6 patients. The size of the tumor mass was reduced in every instance, the reduction varying from 30 to 70 per cent. This he believes to be due to the direct action of the rays upon the tumor mass.

The Coolidge tube was used exclusively in treating these cases, and with proper technique Lange concludes that the menopause may be brought about in any patient irrespective of age, and in properly selected cases is of extreme clinical value.

W. H. CARY.

MacNaughton-Jones, H.: Sterility in Women. *Practitioner*, Lond., 1915, xcv, 10.

Sterility is frequently the cause of unhappiness and neurasthenia. When a patient complains of neurasthenic symptoms it is often difficult to determine that sterility is the underlying cause.

In the absence of gross congenital anomalies of the genitalia, the husband's responsibility must be determined. The author gives the technique of Hühner for examining the spermatozoa both before and after contact with the acid vaginal secretion.

Examination of the wife must include the menstrual history, previous state of health, and employment. For the physical examination an anæsthetic may be necessary. The condition of the clitoris, hymen, vaginal walls, cervix, uterus, and adnexa must be determined. A very acid vaginal secretion may be corrected by an alkaline douche. Stenosis of the cervix may require a Dudley or Reynold's operation. Gonorrhœa is a frequent cause of sterility and requires careful examination and energetic treatment.

The prognosis as to the cure of the sterility must always be guarded and all operative treatment scrupulously aseptic, as a slight infection may cause sufficient damage to prevent conception; or a trifling operation on the uterus light up dormant infection of the adnexæ.

S. A. CHALFANT.

Powell, C.: Congenital Absence of Vagina and Uterus. *Denver M. Times*, 1915, xxxiv, 471.

Powell reports a case of congenital absence of the vagina and uterus in a girl 17 years of age. Her personal and family history were negative. She had never menstruated, but regularly every twenty-eight days she experienced pain in the thighs and

back and a dull heavy sensation lasting five or six days. She had previously been examined by another physician who had found no vaginal opening. A dissection had been done upward in the direction of the vagina until a point was reached near the uterine cervix. She had menstruated once since that time, but the opening had gradually closed.

Upon examination under anæsthesia, Powell found a normal labia and urethra, and scar tissue between the labia, but no vaginal opening. Rectal examination failed to disclose any evidence of either cervix or uterus although ovaries were easily palpated. A careful dissection was done between the urethra and rectum upward for a distance of about three inches, but this failed to show any evidence of a cervix. This opening was dilated so as to admit a plug about two inches in diameter. The abdomen was then opened and two large and apparently normal ovaries and tubes were found, but careful search failed to reveal a uterus. An artificial vagina was then made, a portion of resected small bowel being used after the method of Baldwin. The opening thus made remained patent under after-care, and the patient made an uneventful recovery.

H. G. GARWOOD.

ADNEXAL AND PERIUTERINE CONDITIONS

Hellman, A. M.: Ovarian Fibroids; Report of Six Cases. *Surg., Gynec. & Obst.*, 1915, xx, 692.

The author reports in detail 6 cases of this condition, being all the cases of this nature among 4,500 specimens collected in the last ten years in the pathological laboratory of the Charité Frauenklinik in Berlin. The literature of the subject is completely reviewed.

The 6 specimens were studied in detail, one small tumor having been cut serially without discovering the anatomical origin of the growth. Photographs and colored microscopic drawings accompany the work. The author arrives at the following conclusions:

The pathological etiology is still obscure and unsettled. The anatomical origin is variable. The symptoms are those of a tumor of the adnexa, and the diagnosis of fibroid can only be made at the operating table. In fact only after the tumor has been sectioned and studied microscopically can one feel sure that the ovarian tumor is not a myoma or sarcoma or not of epithelial origin. The treatment is operation. The prognosis is good. The tumors can best be classified as fibroma with and without ovarian rests. The pathology is variable from very small to very large. The tumors are as a rule hard and irregular but may be cystic. They may undergo many forms of degeneration, of which fatty degeneration is more common than usually noted. To call a given ovarian tumor a fibroma there must be a definite regularity of the individual fibrous or muscular cells and strands despite all other irregularities. The fibers are as a

rule short and spindle-shaped, the nucleus is slightly bent or pointed and the protoplasm only slightly surrounds the nucleus.

Ries, E.: Primary Syncytioma of the Ovary. *Am. J. Obst.*, N. Y., 1915, lxxii, 46.

The author reports a case in which on account of the local findings and the rapid growth of the tumor a diagnosis of a probable malignant tumor of the right ovary was made and operation performed.

The ovarian tumor was round and the size of a child's head. On halving it, the cut surface was seen to be mottled red and brown. The tumor was almost entirely solid, but had a few small cysts which were filled with serous fluid. It had a thin capsule which could easily be stripped in places.

The uterus contained, in addition to the large fibroid in the left horn, several small fibroids (six). The left ovary was very small, and consisted of two parts, which were almost completely separated. One part was a calcified corpus luteum, the rest was a small senile ovary. The left tube was in dense adhesions, but not occluded.

Microscopic examination showed that the thin capsule of the tumor consisted of parallel connective-tissue fibers between which there was considerable cedema. A number of blood-vessels were seen in this connective tissue, most of which were filled with fresh blood. The capsule sent a few thin strands of connective tissue into the substance of the tumor, but they were very slender and were lost almost immediately below the surface; the center of the tumor consisted entirely of tumor elements without any normal structures.

The connective tissue of the capsule was inlaid in parts with tumor elements in more or less solid masses, in other parts the connective-tissue fibers separated and left open spaces of various dimensions. The open spaces were lined with tumor elements. The centers of these spaces were occupied either by degenerated or by actively growing tumor elements, or by fresh or degenerated red blood-cells and fibrin, or by combinations of all of these.

The tumor elements consisted in most cases of protoplasmic masses not divided into individual cells and containing large numbers of nuclei. The protoplasm stained more or less dark with hæmatoxylin and the nuclei stained even darker. The nuclei were large and showed distinct nucleoli in varying numbers. The protoplasmic masses formed many bizarre shapes, ribbons, garlands, arches, or appeared vacuolated. They occupied large areas and dominated the microscopic appearance of the tumor. Light cells with distinct cell outlines and lightly stained nuclei (Langhan's cells) were present here and there among the syncytial masses but were in the minority. The syncytial masses showed degeneration in many areas.

From the above microscopic findings the author made a diagnosis of syncytioma malignum or chorioepithelioma malignum of the ovary. He gives

in abstract 6 similar cases which he found in the literature of the past few years, and discusses the possible origin of this tumor. C. H. DAVIS.

Freund, H.: Delivery After Conservative Ovariectomy. (Geburt nach konservativer Ovariectomie). *Zentralbl. f. Gynäk.*, 1915, xxxix, 523.

In a former contribution, Freund described his method of ovariectomy, which had as its object the preservation of any normal bit of ovarian stroma so that pregnancy might take place. He describes here a case of bilateral ovarian cyst in a young woman of 22. The left ovary was entirely removed. The right was transformed into a cyst as large as a fist. The cyst was split open and a piece of ovarian tissue with normal follicles was found not far from the insertion of the pedicle into the wall of the tumor. The cyst was cut away from this normal bit of ovary and was left intact. Ten months later the woman became pregnant and was delivered at term of a healthy child. His method of splitting open the cyst and examining the walls, he holds, is the only way of quickly finding any normal ovarian tissue. The normal part is not necessarily near the insertion of the pedicle, as some authors claim. This case which he cites was a cyst of the hilum and the remnant of ovarian tissue was at the pole of the tumor directly opposite the tube. A. Goss.

Fitzgibbon, G.: A Case of Tuberculous Salpingitis with Unusual Toxic Symptoms. *Med. Press & Circ.*, 1915, cl, 565.

The patient at first presented symptoms of eye distress associated with fatigue and rheumatic pains in the eye, arm, and knee and was treated for rheumatism as well as for the eye condition. This form of treatment failed to relieve the patient and upon examination the author made a diagnosis of tuberculous salpingitis. Upon performing a laparotomy, he found both tubes enlarged to about the size of hens' eggs and there were dense adhesions involving both bladder and rectum. The entire mass was removed and the patient made an uninterrupted recovery; from the third day after the operation, pains in the arm and leg completely disappeared and sight was improving.

Fitzgibbon is of the opinion that the symptoms in the case were due to the action of the toxins formed in the pelvis, the most serious effect being upon the eyes, tending to produce total loss of vision, while the pains in the limbs were probably neuritic and due to the same cause.

W. D. PHILLIPS.

Nair, B. P.: The Organisms Which Cause Infection in the Female Pelvis and Their Paths of Entrance. *Clinique*, Chicago, 1915, xxxvi, 353.

The author gives a very short review of the work that has been done on the bacteriology and the micro-organisms of the female external genitals with a few words regarding their mode of entrance and their pathogenicity.

The following conclusions are reached as to the variety and modes of entrance of the micro-organisms into the female pelvic structures:

1. Extension of mixed infections from adjacent tissues or through the blood and lymph channels.
2. Extension of a gonorrhœal infection of the urethra and Skene's glands to the cervix, uterus, tubes, and peritoneum.
3. Infections due to constitutional diseases; e.g., tuberculosis and syphilis.
4. Infections associated with acute fevers.
5. Infections associated with aphthæ or thrush (*odidium albicans*).
6. Infections due to the bacillus *aërogenes capsulatus*, which enters through the vagina and cervix.
7. Infections due to bilharzia hæmatobia, which is endemic in Africa.
8. Infections due to the echinococcus, which may have entered through an abrasion of a mucous surface or may be secondary to a focus in some remote organ; e.g., the liver. HARVEY B. MATTHEWS.

Bandler, S. W.: Danger Signals of Cancer of the Female Pelvic Organs. *Internat. J. Surg.*, 1915, xxviii, 237.

Regarding malignant disease of the female pelvic organs, the author calls attention to the following facts:

1. Pain is a very late symptom of cancer of the female pelvic organs.
2. The most important early symptoms are abnormal menstruation and persistent leucorrhœa — often of foul odor.
3. A serous, thin, watery or blood-tinged vaginal discharge or bleeding after coitus or recurrence of bleeding after a varying period of the menopause should at once excite suspicion of malignancy.
4. Pure sarcomatous growths of the uterus are extremely rare and sarcoma changes in fibromyomata of the uterus rarely show symptoms any different from simple fibromyomata.
5. Solid tumors of the ovary are usually malignant. Only a few cystic tumors of the ovary are malignant.
6. Cervical polyps have a tendency to malignancy, beginning usually at their bases; consequently every cervical polyp must be examined microscopically.
7. All suspected cases of malignancy should have a diagnostic curettage or excision of enough cervical or other tissue for microscopical examination.
8. Early diagnosis is absolutely the only hope in malignant disease of the female pelvic organs.

HARVEY B. MATTHEWS.

EXTERNAL GENITALIA

Outerbridge, G. W.: Sweat-Gland Tumors of the Vulva. *Am. J. Obst.*, N. Y., 1915, lxxii, 32.

The author reports the case of an unmarried woman, 39 years old, who had for many years had

a small, freely movable, painless tumor in the extreme anterior portion of the right labium majus, just to the right of the clitoris. As it had recently become ulcerated it was removed by means of the cautery.

On section through the middle of the specimen it was found to be made up of a nodule of yellowish-white, fairly firm tissue, with a slight amount of softening in the center. The microscopic sections showed that the tumor consisted primarily of innumerable irregular acini and papillæ, the acinar characteristics being more marked in the peripheral portions, the papillary in the central. In one portion the tumor tissue was separated from the surrounding corium by a narrow epithelium-lined cleft, suggesting the formation of the papillary masses in a cystic cavity, but for the most part the tumor acini were in direct contact with the surrounding fibrous corium. The individual acini were separated, for the most part, by exceedingly delicate connective-tissue septa, though in places these were somewhat thicker and carried small blood-vessels.

The author gives in abstract 11 cases he has collected from the literature, and makes the following summary:

Of recent years there has come to be recognized a fairly definite group of tumors of the vulva, usually involving the labia majora, and believed to originate from the sweat-glands. The tumors are small, rarely exceeding a centimeter in diameter, slow-growing, painless, and present few clinical symptoms. They may be single or multiple, unilateral or bilateral. On microscopic examination, they present a papillary cystadenomatous structure, in which certain characteristics of the finer anatomy of normal sweat-glands are reproduced. Both histologically and clinically, the tumors of this class so far reported appear to have been benign, although the possibility of recurrence after removal, or of carcinomatous degeneration, must not be lost sight of.

C. H. DAVIS.

MISCELLANEOUS

Chase, W. B.: Radium in Gynecological Practice.
Am. J. Obst., N. Y., 1915, lxxii, 90.

For ten years, in treating cancer of the cervix, the author has used the high thermocautery operation—and destroyed the endometrium by burning the body, followed by radium. From his experience he believes that it is the most efficient method of treatment for inoperable cases. He believes that panhysterectomy should be performed unless metastasis has rendered it futile.

After reviewing the results of various writers, and giving a brief history of a few cases he has treated, he concludes as follows: Particular emphasis should be given to prophylactic and post-operative radiation. Its analgesic influence in affording palliation and sometimes a controlling influence over pain with avoidance of perturbing opiates, is one of the most precious properties, although almost unknown and little appreciated. Insistence on the utility of cross-firing frequently by burying radium in malignant growths has too long been neglected.

The author believes that too little attention has been given to the general health and the hygienic surroundings of the patient. Finally, as in surgery, so in radium, disappointments are and must be encountered, and caution should be exercised in making promises as to results.

C. H. DAVIS.

Clark, W. L.: The Uses of Desiccation Surgery in Gynecology. *Am. J. Obst.*, N. Y., 1915, lxxii, 63.

The author has used desiccation in his practice for seven years and advises it for the following conditions:

Curatively: venereal warts, leukokeratoses, condylomata, moles, pigmentations, chancroids, angiomas, pruritus of nervous and eczematous origin, urethral caruncle, erosions and infected glands, lupus, fissures of the vagina and rectum, erosions of the cervix, hæmorrhoids (external and internal), localized epitheliomata, and rodent ulcers.

Palliatively: chancre (influencing the treatment and prognosis of lues), advanced epitheliomata of the external genitals and adjacent parts, and inoperable carcinoma of the vagina, cervix, bladder, and rectum.

He claims for desiccation the following advantages:

Abnormal tissues may be devitalized rapidly and the operation is bloodless. It is a precise method, the smallest discernible spot may be treated, as may a growth covering a large area, and to a depth within the limit of safety. The current has anæsthetising properties if properly applied, and is usually sufficient without other anæsthetic. There is a devitalizing action on cells of less vitality than normal cells, somewhat deeper than the desiccated area, the normal cells recovering. The current sterilizes the tissue and healing progresses rapidly. Channels are sealed, which lessens the likelihood of metastasis in cases of malignancy. There is absence of contracted cicatricial tissue. The method has no disadvantages other than the expense and cumbersomeness of necessary apparatus.

C. H. DAVIS.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Küstner, O.: Extraperitoneal Cæsarean Section for Shoulder Presentation (Extraperitonealer Kaiserschnitt wegen verschleppter Querlage). *Zentralbl. f. Gynäk.*, 1915, xxxix, 539.

Küstner describes a case of shoulder presentation in a woman of 23; the child was in the dorsoposterior position and was so firmly fixed that version was impossible. The head was on the right side of the fundus, the breech and feet on the left. He performed extraperitoneal cæsarean section, making the incision on the left side of the cervix, where the child's feet lay. He took hold of the right (lower) foot, but in extraction the left (upper) foot struck against the child's back and made extraction so difficult that the child died. Both feet should have been grasped and there would have been no difficulty in extraction. The mother's recovery was uneventful.

Küstner thinks extraperitoneal cæsarean section is indicated in the few cases of shoulder presentation with a living child. Transperitoneal cæsarean section is a much more serious operation, for the mother and the child's chances are so poor anyway that it is not worth the greater risk to the mother. As the incision is in the cervix and the child lies in the fundus version is necessary, and this should be by both feet to avoid the difficulty encountered in this case.

A. Goss.

Orlovius, M.: Functional Testing of the Kidneys During Pregnancy to Decide the Question of Inducing Abortion (Funktionsprüfung erkrankter Nieren bei bestehender Schwangerschaft zur Entscheidung der Frage der künstlichen Unterbrechung). *Ztschr. f. Geburtsh. u. Gynäk.*, 1915, lxxvii, 348.

It is often difficult during pregnancy to decide from the clinical symptoms whether a kidney is sufficiently diseased to justify inducing an abortion. Orlovius suggests a functional test that he has found of value in deciding the question, taken in conjunction with the clinical signs. He tests the excretion of creatinin at 6-hour intervals for a day. Then he gives 1.5 gm. creatinin and makes the tests again at 6-hour intervals for another day. Then after this creatinin is eliminated the tests are again made on a third day. Details of his technique and the tabulated results in a number of cases are given.

The average amount of creatinin excreted daily by a healthy individual is 0.8 to 2.4 gm. He found that the average daily excretion in 11 normal pregnant women was 1.23 gm. After giving the creatinin, if the kidneys are normal it is practically all eliminated at the end of two of the 6-hour

periods; if it is not all eliminated by the end of the first 24 hours it is evident the kidney function is disordered. The elimination may be regarded as complete when the creatinin excretion returns to its normal figure.

The creatinin may be given through the mouth or intramuscularly, but Orlovius prefers the latter method as more of the creatinin is eliminated through the kidneys by this method. Part of it is eliminated through the intestines, so no laxatives should be given during the test, and if diarrhoea exists it should be treated before the tests are given. The greater the proportion of creatinin excreted during the first 6-hour period the more normal the kidney, and the greater the proportion excreted during the succeeding periods the more seriously is the kidney impaired. If the clinical signs and the creatinin test show the kidney seriously affected and a second test a week or two weeks later shows no improvement, abortion is indicated. The test is easy to carry out and neither unpleasant nor harmful to the patient.

A. Goss.

LABOR AND ITS COMPLICATIONS

Williams, J. W.: The Effect of Pubiotomy upon the Course of Subsequent Labors. *Am. J. Obst.*, N. Y., 1915, lxxii, 1.

From an experience with pubiotomy which began in 1906 and has continued until the present time the author has given a most valuable contribution to obstetrical literature. The histories of the labors in 20 cases are given in abstract. After discussing pubiotomy and its value in various types of contracted pelvis the author draws the following conclusions:

1. Among 30 labors, which occurred subsequent to pubiotomy in 20 individuals, 13 full-term and 13 premature children were born spontaneously.
2. In somewhat more than one-third of the cases, particularly in funnel pelvis, pubiotomy has resulted in sufficient enlargement of the pelvis to permit subsequent spontaneous labors.
3. Experience has proved that greater conservatism is necessary in the employment of pubiotomy, which should not be regarded as an elective operation except in funnel pelvis in young women.
4. In contractions of the superior strait, the aim should be to differentiate the patients into those requiring cæsarean section at the onset of labor, and those in whom a spontaneous outcome may reasonably be expected. Pubiotomy should be employed in the latter only when the failure of the head to engage after a prolonged second stage has demonstrated that the prognosis is erroneous.

5. Pubiotomy does compete with elective cæsarean section at the onset of labor, but is far safer than conservative cæsarean section late in the second stage.

6. In moderate degrees of contraction of the pelvic inlet, the great field for pubiotomy is in patients who have not been seen until late in labor, or who have been examined by those whose technique is questionable. In such cases conservative cæsarean section is too dangerous, so that the choice lies between pubiotomy, cæsarean section followed by removal of the uterus, or craniotomy upon the living child. If definite infection is present, pubiotomy is contra-indicated.

7. In version or breech extraction when there is a moderate disproportion, prophylactic laying of the Gigli saw adds greatly to the peace of mind of the operator, as it enables him to resort promptly to pubiotomy if unexpected difficulty is encountered.

8. The most promising field for pubiotomy is in funnel pelvis in young women, as it not only permits the delivery of a living child, but offers a reasonable prospect of permanently enlarging the pelvis, so that subsequent labors will end spontaneously.

9. With proper training in the treatment of labor complicated by contracted pelvis, the author believes that the induction of premature labor can be definitely abandoned.

C. H. DAVIS.

PUERPERIUM AND ITS COMPLICATIONS

Warnekros, K.: Prognosis of Puerperal Fever Based on Bacteriological and Histological Examination (Zur Prognose der puerperalen Fiebersteigerungen auf Grund bakteriologischer und histologischer Untersuchungen). *Arch. f. Gynäk.*, 1915, civ, 301.

In this article of 80 pages Warnekros gives the results of bacteriological and histological examination in several hundred cases of fever during the puerperium and the relation of the results of such examination to the course and outcome.

The results of histological examination and examination of the blood for bacteria supplement each other in a very valuable way. Repeated examinations of the blood should be made in all cases of rise of temperature during the puerperium. It is well known that some cases are harmless and due to intoxication; these are revealed by blood examination and moreover the local can be separated from the general infections. Examination of the blood enables the physician to avoid unnecessary operations in cases with favorable prognosis and on the other hand to recognize general infections at an early stage when there is hope of arresting their progress by suitable treatment.

A. Goss.

MISCELLANEOUS

Thoms, H. K.: A Statistical Study of the Frequency of Funnel Pelvis; a Description of a New Outlet Pelvimeter. *Am. J. Obst.*, N. Y., 1915, lxxii, 121.

The author adds 1,785 pelvic measurements to the ones already reported by Williams, making a

total of 4,000 reported from the Johns Hopkins clinic. After tabulating the various types of abnormal pelvises to show the frequency of the various types in white and colored patients, and describing the manner of measuring the pelvic outlet with his modification of the William's instrument, the following summary is given:

1. The most frequent type of contracted pelvis occurring in white women is the funnel pelvis, constituting 37 per cent of all contracted pelvises found in the white race.

2. It is of equal incidence in both the white and black races, but owing to the greater frequency of the usual types of contracted pelvis in the latter race it constitutes but 14.5 per cent of all contracted pelvises in black women.

3. Owing to the course the child's head must take in funnel pelvis, we must expect an increase in the number and severity of perineal lacerations.

4. The modified Sim's posture affords an excellent means of increasing temporarily the anteroposterior diameter of the outlet.

5. In severe contractions of the outlet pubiotomy is the operation of choice, in many instances transforming the deformed pelvis into one with practically normal measurements.

6. The following may be taken as the average measurements of the normal outlet:

Transverse.....	9.5 cm.
Anterior sagittal.....	5.0 cm.
Posterior sagittal.....	7.5 cm.
Anteroposterior.....	10.5 cm.

7. The pelvimeter described provides an easy and accurate means of determining the diameter of the pelvic outlet.

C. H. DAVIS.

Böhi, P.: Sarcoma of the Placenta (Über Chorioma malignum). *Arch. f. Gynäk.*, 1915, civ, 214.

The new-growths of the placenta that originate in the foetal ectoderm, such as chorio-epithelioma, syncytioma malignum, and hydatidiform mole, have been very thoroughly studied within recent years, but those originating in the mesoderm have not been so studied, and there is still considerable lack of uniformity in the nomenclature. Only a few cases of true sarcoma of the placenta have been described, but Böhi had two cases within a few weeks of one another.

The first case was a VI-para of 35 who was delivered normally of a child which died in a few days. The child was oedematous, the heart-muscle showed degenerative changes, and the liver was rudimentary. The tumor, the size of a small child's head, was fastened to the placenta by a long pedicle. Microscopic examination showed pure sarcoma tissue. About a year later the patient developed signs of pregnancy or tumor, but the uterus was curetted and she has been well for a year since.

The second case was a woman of 27 who was delivered of a living and healthy child. Immediately after the delivery of the placenta a hard, oval tumor the size of an egg was discharged.

Both women were frail but had no kidney or heart-disease; there were no signs of syphilis in mother or child in either case. In spite of the fact that both tumors showed typical pictures of sarcoma their clinical course was benign. This is in marked contrast to chorio-epitheliomata and syncytial tumors. Colored plates and illustrations are given showing the macroscopic and microscopic appearance of both tumors. A. Goss.

Hymanson, A.: Hæmorrhagic Disease in the New-born Treated by Horse Serum. *N. Y. M. J.*, 1915, ci, 1274.

After a careful résumé of melæna neonatorum and the usual drug therapy, Hymanson reports four cases treated with horse serum, with three recoveries, and one fatality. His conclusions are:

1. The coagulation time of blood is usually delayed.
2. It is difficult to obtain human blood serum or blood, but fresh horse or rabbit serum is always available and serves just as well.
3. In the newborn where bleeding is not spurious, horse serum should be administered early and repeatedly until bleeding ceases.
4. Reports of the injurious effects of horse serum are greatly exaggerated. H. G. GARWOOD.

Ingraham, C. B., and Chase, P. M.: Observations upon the Use of Pituitary Extract in Obstetrics. *Colo. Med.*, 1915, xii, 190.

Ingraham and Chase report their observations in the use of pituitary extract in 44 obstetrical cases. Tetanic pains are more common where there is resistance to the descent of the child. The effect of the drug lasted from one half to two and one half hours. In 37 cases in which the drug was given during the first and second stages, there was marked effect in 26, slight in 3, none in 8. The greatest rise of blood-pressure was 20 mm. Hg. In 15 cases the maternal pulse had an average fall of seven beats. The foetal heart-beat in 9 cases showed an average fall of 11 beats. Of 33 cases in which records were kept of the effects on the children, 20 were born in excellent condition, 6 slightly asphyxiated, 5 extremely so; 3 lived but a short time, 2 born dead were known to be alive before the extract was given. Coils about the neck, rapid descent, tetanic contractions, convulsions, prematurity in a syphilitic child are given as probable causes of foetal death. Of 30 cases 7 had excessive post-partum bleeding; of these 2 had deep cervical tears, 1 excessive distention due to hydramnios. It was used for post-partum hæmorrhage in two cases, and the author concludes that ergot is better. They do not consider it of much benefit as a means of inducing labor. It was used for therapeutic abortion in 3 cases, but was of practically

no benefit in the early months. It was used in 2 cases to maintain uterine contractions during cæsar-ean section. The most common indication is in secondary inertia; with the cervix fully dilated, the head low, and no dystocia it is safe. It lessens the use of forceps.

The conclusions are:

1. It must not be used haphazardly.
2. Its use is now abused. It is given to hasten labor regardless of conditions.
3. It has indications and when rightly used is a valuable obstetrical adjunct. H. G. GARWOOD.

Holzappel, K.: Points on Obstetrical Operations (Betrachtungen zur geburtshilflichen Operationslehre). *Zentralbl. f. Gynäk.*, 1915, xxxix, 425.

Holzappel mentions a number of points that are not generally given in textbooks, and though they may be regarded as minor matters still they are of importance, especially in teaching students. Directions for movements, for instance, should be given according to the direction of the patient's body, not with reference to the position of the physician. This should be borne in mind in teaching the use of forceps. In extracting a breech presentation he exerts traction downward and backward, that is, he pulls directly down on the perineum. This stretches the perineum gradually and makes it easier to extract the head. In all breech and transverse presentations the opposite hand should be used. In breech delivery the finger is the best instrument; it should be exercised so as to make it strong enough. If neither the finger nor an oiled rubber tube proves sufficient a hook can be used with an oiled rubber tube drawn over it.

He gives minute directions for protecting the perineum. If it is very resistant he stretches it with his hand and if this fails makes an incision in or near the raphé, because this is easier to suture than a lateral incision. The incision is made, however, only if the sphincter is in danger. Any manipulation of the head through the rectum is directly opposed to asepsis. Directions are generally given to cut the cord after pulsation has stopped; this is really of no importance. The essential thing is to cut it after the child has cried or breathed freely, and during a pain. It is particularly important to cut it during a contraction if the child is not breathing well. Generally the first pain appears about five minutes after the delivery of the child, and this time may be utilized to clear the child's respiratory passage of mucous or amniotic fluid. If the child gets too much blood from the placenta it may become jaundiced, but more than the minimum is certainly of advantage to it. In the 18 years in which the author has practiced the above technique he has never had a severe case of jaundice.

A. Goss.

GENITO-URINARY SURGERY

KIDNEY AND URETER

Kinnear, F. J.: Probable Left Nephrolithiasis with Passage of Small Calculi, Some Lodging in the Urethra and Causing Urethritis. *Urol. & Cutan. Rev.*, 1915, xix, 376.

The author cites the case of a man, aged 42, with a history, five years before admission, of excruciating pain in the left side referred to the left testis and the head of the penis. There were six recurrences of this crisis in four years, each accompanied by passage of small particles of gravel. Five months previous to consultation the patient noticed difficulty in passing urine, requiring fifteen minutes to empty the bladder drop by drop, with great frequency and pronounced soreness along the urethra, accompanied by a purulent discharge containing bacillus coli and some pyogenic organism.

Endoscopy revealed a stricture, with a calculus lying behind it, acting as a ball valve. Internal urethrotomy was done, 3 drams of olive oil were introduced into the urethra, and several stones and amorphous masses milked out according to the method of L. E. Schmidt.

The interesting mechanical point is whether the first stone coming down from the kidney caused the stricture itself by the trauma it offered to the urethral wall, or whether it simply lodged behind a stricture resulting from a previously denied gonorrhœal infection. The therapeutic point of note is the great ease with which a stone covered with spicules could be expressed from the urethra by using a small quantity of olive oil as a lubricant.

H. W. PLAGGEMEYER.

Noguiera, A.: Giant Calculus of the Renal Pelvis and Hypernephroma. *Am. J. Urol.*, 1915, xi, 261.

The patient had suffered a fall from a horse 19 years previous, followed by severe hæmaturia for four days. The hæmaturia recurred 15 years later. The pain was localized to the left iliac fossa. The lumbar region on the left side showed a tumor mass the size of a fist, hard, smooth, and rounded, which was prolonged at its upper end by a smaller, thinner, and softer one which was floating and movable with each respiration. Functional tests showed the right side normal, left side deficient. Radiography showed a shadow extending from the eleventh rib to the terminal apophysis of the third lumbar vertebra. A shadow measured 12 cm. at its vertical diameter, 9.5 cm. at its horizontal diameter, and the distance between its external outline and median line was 4 cm.

Nephrectomy was performed. In the renal

pelvis there was a tumor the size of an orange, smooth and adherent to the lips of the renal sinus and enveloping a hard rounded body fixed to its coverings. At the upper pole of the kidney, a tumor the size of an egg proved to be a hypernephroma. The calculus filled the enormously distended pelvis. It weighed 400 gms. Its longitudinal diameter was 11 cm., transverse diameter 7.5 cm., its greatest circumference 22 cm. It consisted chiefly of urates and calcium oxalates. It presented on its internal aspect 4 nipple-like processes corresponding to the calices.

HARRY KRAUS.

Morian, R.: Irritation of the Kidney from Novocaine Anæsthesia (Nierenreizung nach Novokainanästhesie). *Zentralbl. f. Chir.*, 1915, xlii, 493.

Morian has found albuminuria in from 5 to 10 per cent of his cases after novocaine anæsthesia. The amount varied from mere traces up to 0.5 per thousand. It began generally a few hours after the injection and persisted for 48 hours, then disappeared entirely. Sometimes there were hyaline and granular casts in the urine also, and in a few cases red and white blood-cells. The amount of urine did not seem to be much affected, though sometimes it was irregular and sometimes decreased in amount. The adult patients had had morphine injections before the beginning of the anæsthesia, but neither morphine nor suprarenin irritates the kidneys, so the albuminuria cannot be attributed to that. It did not seem to make any difference what strength of solution was used or what was the site of the injection.

Most of Morian's patients suffered from vomiting after local anæsthesia. Novocaine does not influence the blood-pressure, so the albuminuria cannot have been due to changes in blood-pressure. In 1907 Schwarz pointed out the fact that stovaine anæsthesia was sometimes followed by albuminuria as high as 7 per thousand.

A. Goss.

Marzynski, G.: Diagnosis of Horseshoe Kidney (Zur Diagnostik der Hufeisenniere). *Deutsche Ztschr. f. Chir.*, 1915, cxxxiii, 281.

From a review of extensive statistics Marzynski finds that there is about one case of horseshoe kidney in 555 autopsies. But as horseshoe kidney is more subject to injury on account of its position and on account of being fixed so that it cannot move when struck, it is reported more frequently in surgical operations. Mayo reports 12 cases in 649 kidney operations, and Botez reports one horseshoe kidney to 715 autopsies and 1 to every 143 operations.

Botez attempted to devise a symptom-complex

by which horseshoe kidney could be diagnosed when it was not diseased. He proposed the following three cardinal symptoms: (1) nervous disturbances, neurasthenia, hysteria; (2) digestive disturbances; (3) pain in the abdomen on bodily exertion, especially when the spinal column is bent, which disappears when the body is at rest. These symptoms, however, are not characteristic enough of the condition. They are frequently found from other causes, especially in gynecological affections.

By palpation, röntgen photography, introduction of catheters containing bismuth into the ureters, and by pyelography the following characteristic signs of horseshoe kidney can be made out: (1) The position of the kidneys is lower down, farther forward and farther toward the median line than the normal kidney. (2) The pelvis is located on the anterior wall of the kidney. The ureters are abnormally short and the kidneys converge at the lower pole instead of at the upper as in normal kidneys.

A detailed description is given of 7 cases of horseshoe kidney and the importance is emphasized of determining whether the connecting bridge is only membrane continuous with the kidney capsule or whether it contains kidney substance; operation being of course much less serious in the former class of cases.

A. Goss.

Gray, E. T.: A Case of Pyelonephritis Complicated by Adenocarcinoma and Chyluria. *Boston M. & S. J.*, 1915, clxxiii, 95.

The author reports a case of adenocarcinoma of the kidney with chyluria.

The patient, a widow of 74, had had kidney trouble 14 years, floating kidney being diagnosed. Four years later she had an abscess of the urinary tract with a discharge of pus from the bladder for a few weeks. Every nine or ten months afterward attacks of severe pain in the right lumbar region occurred lasting from two to five weeks.

When seen the patient was suffering severe pain in the right side which had begun three weeks before. She was cachectic and had a temperature of 103°, pulse 100. A large mass filled the right abdomen which was very tender on pressure.

The urine showed albumin, many pus-cells, much fat, and a few hyaline casts. X-ray examination showed a dense shadow much mottled but without definite outline.

At operation, by Israel's incision a large amount of pus and bloody débris with several stones was evacuated. The cavity was irrigated and sutured with ample drainage. The patient made a good recovery and was able to leave the hospital in five weeks with the wound practically closed.

Pathological examination of the material removed from the abscess cavity showed adenocarcinoma.

True adenocarcinoma of the kidney is practically unknown, but quite frequently in conjunction with carcinoma, adenomatous masses are found, and to this condition the term adenocarcinoma is given.

Chyluria is a peculiar condition of the urine in which it presents a milky appearance and contains fat. It is usually acid and resembles the urine of pyuria but can be distinguished by the microscope which shows fat in a fine state of emulsion. Chyluria is often associated with elephantiasis and lymphangiectasis. It may be of parasitic or non-parasitic origin. The parasitic or obstructive type is due to obstruction of the kidney lymphatics by the *filaria sanguinis hominis* and their rupture and discharge of chyle into the kidney.

The cause in the non-parasitic form is obscure; possibly it is a symptom of malignant tumor of the kidney.

H. G. HAMER.

Richardson, E. P.: Perinephritic Abscess; a Review of Cases Operated on at the Massachusetts General Hospital from 1899 to 1913. *Surg., Gynec. & Obst.*, 1915, xxi, 1.

The author reviews 59 cases operated on at the Massachusetts General Hospital in the 15 years from 1899 to 1913, with especial reference to the rôle played by metastatic hæmatogenous infection in the development of perinephritic abscess.

These cases of perinephritic abscess fall into three groups: those due to extension of suppuration from structures outside of the perirenal fascia, those secondary to disease of the kidney, and those without obvious source.

The mortality, 10.2 per cent, was confined entirely to the first two groups. The last group, those of uncertain origin, showed a predominance of the staphylococcus as the causative organism, and in three instances perinephric suppuration was apparently metastatic from furuncles.

The following conclusions may be drawn:

1. The commonest organism, the staphylococcus, producing primary perinephritic abscess is also the most frequent organism concerned in producing focal cortical abscess in the kidney.
2. Primary perinephritic abscess occasionally follows peripheral pus foci due to staphylococcal infection. In such cases it is reasonable to suppose that infection has followed a metastatic hæmatogenous course.
3. A urine normal on clinical examination does not exclude the possibility of cortical renal abscess.
4. The previous occurrence of a peripheral pus focus may be of some importance in the diagnosis of continued fever with leucocytosis and lumbar or abdominal pain.

Ricen, L.: The Therapeutic Value of the Cortical Substance of the Kidney. *Northwest Med.*, 1915, vii, 225.

In an interesting way Ricen opens up the question of internal secretion (?) from the kidney. In a case of chronic nephritis with acute exacerbation with diminishing urine and approaching uræmic symptoms, he gave 50 grams of the crushed cortical substance of beef kidney by mouth. During the succeeding twenty-four hours the patient passed

43 ounces of urine. The administration was continued at increasing intervals until in six weeks the patient was able to return to his work.

He objects to the ordinary diuretics, citing the experiments of Fitz, of Boston, working on animals in which he had produced uranium nephritis. Such diuretics as diuretin and theocin were invariably hurtful in these cases.

Dieulafoi in 1894 suggested the use of kidney cortex. He later produced an extract, nephrin, which was injected subcutaneously with gratifying success.

Schiporowitch of St. Petersburg and Gonin of Paris report favorably on this experimental work.

Ricen discusses the *modus operandi*, referring to the work of Rose Bradford, who found that completely nephrectomized animals would live for days when regularly injected hypodermatically with kidney extract. Animals not so treated died in a few hours.

The inference is that an internal secretion exists which either neutralizes or converts into less dangerous forms the toxic substances associated with uræmia.

F. C. CHARLTON.

Aynsworth, K. H.: Acute Pyelitis; Its Diagnosis and Treatment. *Surg., Gynec. & Obst.*, 1915, xxi, 123.

The author states that the colon bacillus is the chief organism present in acute pyelitis. He is inclined to discredit the theory of ascending, descending, and hæmatogenous infection of the kidney pelvis and seems to lay more stress upon Weibel's theory of direct lymphatic connection between the colon and the kidney. He states that the symptomatology of acute pyelitis is that of a general infection associated with frequent urination and irritable bladder. Occasionally if the pus is thick enough or the swelling great enough to close the ureter to these symptoms there are added pains in the side, colic, and a sensitive enlarged kidney.

In regard to treatment, the author maintains that dilatation of the ureter with the ureteral catheter is the chief factor in producing relief.

At times he washes the pelvis of the kidney with sterile water followed by 10 per cent argyrol, but is doubtful as to the value of this procedure.

He reports five cases of acute pyelitis in great detail showing the rapid improvement following ureteral catheterization.

In conclusion he makes the following résumé:

Pyelitis is a disease which is very frequently not diagnosed, due to the fact that the symptoms are so often directed to the bladder. There may be no localizing symptoms at all to guide one; unless the urine be microscopically examined, followed by cystoscopy and ureteral catheterization, it is possible to overlook the disease. Tenderness and pain in the kidney may or may not be present, depending upon whether or not there is blocking of the urinary outflow or whether there is involvement of the kidney substance.

Treatment should be general and local; general treatment should be to secure an acid urine with some drug which will eliminate formaldehyde; also, massive water drinking must be ordered, especially in those patients who have no nephritis; liquid diet is best; rest in bed should be insisted upon; and last and by all means kidney drainage by the ureteral catheter and local applications to the kidney pelvis are advised.

V. D. LESPINASSE.

Specklin, P. A.: A Giant Calculus of the Ureter. *Am. J. Urol.*, 1915, xi, 270.

The patient, a male, aged 48, suffered the first severe colicky attack twelve years previous. During the past year the urine had been turbid and contained red blood-cells and a large number of leucocytes. Cystoscopy showed an œdema around a normal ureteral orifice on the right side. The left ureter was prolapsing and inflamed; œdema bulbosum was around the orifice, and contractions were visible. Chromocystoscopy showed a normal right ureteral orifice. The opening of the left ureter showed a puckered crater within which there was a stone the size of a pinhead which at the beginning of each ureteral contraction was pushed forward and then drawn back but remained visible in the intervals. X-rays showed a shadow in the left parasacral region. Nephrectomy was performed. The kidney was enlarged and showed cystic degeneration; the pelvis was greatly enlarged and contained a calculus weighing 16 gms. The ureter was the size of a little finger. The calculus weighed 51 gms, and was 12 cm. long. At the end which was nearest the bladder was the sharp point seen at cystoscopy. About the middle of the concretion the upper and lower arms were joined by a narrow elbow at an angle of 150 to 160°.

HARRY KRAUS.

Ries, E.: A Case of Ectopic Ureter. *Lancet-Clin.*, 1915, cxiv, 83.

The author reviews the case history and emphasizes the important points. From the data obtained, he decided that no condition except ectopic ureter would fit the symptoms and it became evident that the patient must present a rare malformation in which the ureter had been misplaced congenitally in its lower course and opening. The patient, a young woman of 19, complained of incontinence since birth. On inspection of the external meatus, it was found that there was a little pouting fold in which was a small opening which exuded clear fluid in drops. A probe could be introduced and passed between the ureter and vagina without entering either. Cystoscopy showed the bladder to be normal and both meati discharging urine normal in amount and clear. A ureteral catheter passed on the left side was obstructed about 3 cm. from the bladder. The catheter introduced into the ectopic ureter would not pass higher than the trigone. The uterus was found enlarged corresponding to a four months' pregnancy. Because of the pregnancy,

the author was very careful in his choice of operation. By way of a median incision he dissected out the ureters on the left side and as suggested by Kawasoye, the ureter itself was tied in a double knot and a ligature was placed on the free end of the ureter below the knot. The incontinence was cured at once and the patient made an uneventful recovery.

The author calls attention to the rarity of these cases and the different methods which are used in their cure. He reports this case particularly because of the diagnosis, which, simple as it is, when the points brought out above are remembered, is so commonly overlooked that all authors who report such cases with special reference to the history, emphasize the fact that the cases have been treated unsuccessfully for years because the correct diagnosis was not made.

G. J. THOMAS.

BLADDER, URETHRA, AND PENIS

Noguiera, A.: Foreign Bodies in the Bladder; a Remarkable Case. *Am. J. Urol.*, 1915, xi, 219.

A four-year old girl gave a history of polyuria and burning urination for six months. Four months before examination she had passed a small calculus. She was suspected of having a vesical calculus because of her symptoms and the presence of pus and blood in her urine. A radiograph showed a hairpin, one portion of which was apparently covered by a phosphatic incrustation. Suprapubic section revealed a hairpin, 5.5 cm. long, embedded in the bladder and incrustated with phosphates. It was removed.

The author calls attention to the fact that he has been able to find only five cases of foreign bodies introduced into the bladder of very young children. He believes in these cases that radiography is better than cystoscopy for diagnosis, and that suprapubic removal is better than attempting removal *per urethrum*.

B. S. BARRINGER.

Spitzer, W. M.: Diagnosis and Treatment of Papillary or Villous Tumors of the Bladder. *Colo. Med.*, 1915, xii, 187.

Spitzer discusses the diagnosis of tumors of the bladder and wisely lays much stress on the fact that all such growths are to be regarded with suspicion. He decries the all too frequent practice of making a diagnosis of the nature of the growth by the examination of a piece removed through the operating cystoscope. The universal experience is that this means of diagnosis is fallacious. Statistics are given of the operative mortality of such cases and the end-results. The operative mortality varies from 4 to 15 per cent, according to the type of operation. Recurrences have been found in over 75 per cent of cases. Most of these are malignant, even though the primary growth was of a supposedly benign type. Recurrences in the bladder are rare at the original tumor site but come in other places. The advantages of treatment by the high-frequency

current are discussed at length. The percentage of cures by this method is evidently very high, there being about 66 per cent presumably permanent cures.

The author makes a strong plea for the treatment of bladder tumor by fulguration and emphasizes its advantages in a striking way.

J. DELLINGER BARNEY.

Moore, H. A.: Tumors of the Bladder. *Urol. & Cutan. Rev.*, 1915, xix, 361.

Moore summarizes his observations on tumors of the bladder as follows: A purely benign tumor is of rare occurrence. The term non-malignant papilloma is especially criticized. A certain percentage of papillary growths are cancerous from the onset; others pursue a slower course and it may be many months or even years before malignancy is apparent. It is unwise to exclude malignancy in any villous tumor. In Judd's series of cases of tumors of the bladder, the youngest was under 10 years, the oldest over 80—age being of little consequence except as to frequency, the greater number appearing at the average age of 53.1 years. Vesical tumors vary greatly in size and location. Papillomata are usually seen first about the base of the bladder, while the benign growths, especially the myomata, are most frequent in the fundus or lateral walls.

Moore lays the greatest possible stress on hæmaturia and pain as the symptoms to arouse suspicion of bladder tumor; next in order being frequency, with pain before or after urination, with bearing-down pain which may be referred to the lumbar region, down the thighs, or to the glans penis. Occasionally a tumor is found high on the bladder wall; in which case the above mentioned symptoms are not so well marked and the tumor may appear as any other abdominal or pelvic growth. Constitutional symptoms depend in a large measure upon the amount of bleeding—occasionally true cancer cachexia is encountered. Moore advises cystoscopic examination with removal of a piece of the growth for microscopical examination, also routine bimanual examination by rectum or vagina. His prognosis is always guarded in malignant conditions; in the non-malignant it depends upon the size, location, and amount of tissues it is necessary to sacrifice in their removal.

He considers the treatment of vesical tumors to be surgical; he also favors the fulguration method of Beer. His method of operation depends upon the general condition of the patient, the size, nature, and location of the tumor. The extraperitoneal operation is done in tumors high on the bladder wall. If the tumor is situated low on the lateral walls or about the base, he uses the transperitoneal operation if greater exposure is necessary than is permitted by the extraperitoneal method.

His conclusions are:

1. The great majority of bladder tumors are either primarily malignant or undergo early malignant degeneration.

2. Hæmaturia and pain are the most constant symptoms of bladder tumors.

3. Early surgical intervention is imperative.

4. In fulguration we have a method of treatment which in some cases offers possibilities not obtained by other surgical methods.

Squier, J. B.: The Early Diagnosis of Cancer of the Bladder. *Am. J. Surg.*, 1915, xxix, 248.

Squier emphasizes the primary occurrence of painless hæmaturia. Cancer of the bladder comprises about one-half of the tumors of the bladder. Cystoscopic examination of the bladder has brought diagnosis within precise limits. The entire tumor should be submitted to histological examination, search being made for atypical epithelial nests. Philipowicz diagnoses tumors where urethral stricture precludes cystoscopy by distending with collargol solution, the latter adhering to the tumor whose contour shows on the skiagram. Occasionally tuberculous masses present a likeness to neoplasms. Simple ulcers are likewise confusing. Some of these are shallow, others deep and perforating. The former respond to fulguration, the latter require excision. Bimanual examination is an aid to cystoscopy in determining the extent of the cancer.

L. L. TEN BROECK.

Beer, E.: Early Recognition of Malignant Disease of the Bladder and of the Prostate; Operative Therapy. *Am. J. Surg.*, 1915, xxix, 247.

Beer emphasizes the need of cystoscopy for the early recognition of malignancy especially when supplemented with microscopic search. The results of fulguration also are important; malignant tumors not yielding to the same rectal examination must not be omitted. Exploratory incision is sometimes indicated. About 20 to 25 per cent of hypertrophies are malignant; often of slow growth and not inclined to spread. Irregularities in contour, hard nodules, and periprostatic thickening are suspicious signs. Urethoscopically one recognizes the irregularities of adenomata and also a peculiar rigidity of this canal. Exploratory incision may be imperative.

Operative therapy of the bladder consists in radical excision with the cautery. Palliative treatment consists in nephrostomy; ureterostomy; cystostomy; or radium treatment.

Operative treatment of the prostate consists in radical total excision through the perineum or total excision by the abdominoperineal route.

Palliative treatment consists in removal of the gland without disturbing the capsule; suprapubic cystostomy; and X-ray and radium treatment.

L. L. TEN BROECK.

Pedersen, V. C.: Cancer of the Bladder and Kidneys. *N. Y. M. J.*, 1915, cii, 33.

The author discusses malignancy of the bladder. The pathology of the glandular neoplasms varies greatly. The most common growth is the papillo-

ma. It may be either pedunculated or sessile, single or multiple, benign or malignant, primary or secondary. The sessile type is more apt to undergo cancerous degeneration. A benign papilloma frequently undergoes transition into malignancy.

Upon inspection, at least two of the following four points are needed for diagnosis of malignancy: (1) hardness and inelasticity; (2) a high degree of inflammation and irritation of the bladder; (3) multiplication of neoplasms; (4) ulceration, which is a later development.

Among other epithelial neoplasms of the bladder may be mentioned ulcerating carcinoma and epithelioma, which are frequently met, and adenoma and myxomafibroma, which are rare. Epithelioma originates not as a papilloma but as an epithelial manifestation rapidly infiltrating the surrounding tissues. Central ulceration follows, due to faulty blood supply. Later, fungoid and papilloid offsets, resembling degeneration from a papilloma, may develop. Adenoma and myxomafibroma are usually not suspected until cancerous degeneration is advanced.

The foregoing tumors are glandular in type, while sarcoma is of the connective tissue. It is infiltrating or non-infiltrating, each type being fairly regular in outline. It is typical of early life, while carcinoma is typical of middle and old age. The most common location for all tumors is in the trigone and around the ureteral orifices. It is here that a greater supply of lymphatics is found. There is closer contiguity to adjacent organs, such as the uterus in the female, prostate in the male, and the rectum in both sexes, for secondary malignancy is not infrequent. The base is also nearer to where fetal remnants persist.

The symptomatology in children is indefinite, resting upon the effects of the growth itself. In extravescicular growths there is pressure and obstruction from without, followed later by bladder irritation, while intravesicular growths are characterized by irritation first. In both adults and children, bladder hypertrophy and cystitis produce painful dysuria and pollakiuria. Silent hæmaturia is an early symptom, as also is the presence of pus in the urine. These two should be traced to their sources. In early cases these symptoms are not constant, but when they are firmly established it is too late for early treatment.

Bimanual examination per rectum or vagina will, in adults, reveal the source if the tumor is secondary. In children an infiltrating mass may be found in the bladder wall. Cystoscopy should be done by an experienced man, and done when the early symptoms first appear. Not only should the bladder be examined, but the kidneys should be catheterized also, for obstruction very easily causes infection of the pelvis. The urethra should be minutely inspected. The X-ray is of service only when the tumor is well advanced.

Diagnosis by cutting away parts of a tumor for microscopic examination, before radical removal, is

condemned. Secondary deposits follow readily. Clinical diagnosis is more important and accurate, depending upon the four points as previously stated. The pathologist's report is often misleading, for various sections of the same neoplasm show different pictures.

C. D. PICKRELL.

Morton, H. H.: Cancer of the Bladder. *Med. Times*, 1915, xliii, 226.

In a brief but explicit paper, the surgery of bladder cancer is discussed. At the present time it is in a chaotic condition, and will have to be systematized before definite progress can be made. Twisting tumors off by forceps, or curetting them through a suprapubic opening is condemned, as urosepsis and recurrence speedily follow. Cutting through the pedicel or mucous membrane, and at a later date, cauterizing the base of the tumor with an electrocautery improved the technique.

As recurrence follows these operations, Cathelin stated that the bladder should be opened when the following conditions exist: (1) when neoplasms involve the summit or front, (2) when neoplasms clog the neck of the bladder, causing retention, and (3) when there is excessive hæmaturia. In terminal conditions a suprapubic cystotomy or double nephrostomy may be done for relief.

Fulguration by the Oudin current is the ideal treatment for non-malignant tumors, but is useless in carcinoma except in checking hæmorrhage and retarding growth. Radium is uncertain. More radical operations have been done in later years with better results. If the tumor is situated upon the anterior wall or in the vertex, it is removed with the entire thickness of the bladder wall and within a wide area. If within the trigone, ureteral transplantation is necessary. Early diagnosis, before extensive involvement, is emphasized. Every case of hæmaturia should be cystoscoped immediately.

C. D. PICKRELL.

Roth, L. J.: Cystalgia; Urethralgia; Syndrome Vesical and Urethral Neuralgia. *Surg., Gynec. & Obst.*, 1915, xxi, 91.

This syndrome has not been definitely described in many of its phases. To simplify, it is divided into three primary classes: lesions of the nervous system, of the urinary tract, and of adjacent structures. The final consideration is devoted to pelvic and contiguous lesions.

Idiopathic conditions are considered as improbable. Among those which influence the bladder and urethra are: pelvic tumors and masses, adhesions, inflammations, and post-operative nerve inclusions, anteflexed and pregnant uterus and adhesions of the cervix, rectal lesions and distention.

Of major importance among conditions causing bladder spasm are senile muscular atrophy, sclerosis, and atresia of the female urethra and vagina, accompanied by atrophy of the mucosa.

The symptoms consist of vesical and urethral spasm with dysuria. This is of day or night type,

or both, and varies from moderate frequency and pain, to practically continuous urination with intense suffering; or on the other hand, to small retentions, the bladder being painful when containing urine, and relieved when empty.

Cystoscopy and urethroscopy are usually negative. The urine remains nearly normal.

The condition is most probably a neurosis of reflex origin dependent upon intricate pelvic innervation. The bladder itself is but rarely responsible.

GENITAL ORGANS

Coley, W. B.: Cancer of the Testis. *Ann. Surg. Phila.*, 1915, lxii, 40.

The author reviews the literature and quotes a number of well-known authorities on the subject.

Blank's collection in 1906 showed only 19 cases of malignant tumor of the testicle.

Bulkley collected 59 cases of sarcoma of the abdominal variety of ectopia and quotes Eccle's analysis of 60,000 male admissions to the London Hospital, showing 38 cases of sarcoma of the testis, of which one occurred in the undescended testicle.

In 110,000 male patients admitted to the London hospitals during a period of twenty years, Howard found 65 cases of malignant disease of the testis, 9 of which occurred in the ectopic testicle all of the inguinal variety, and none of the abdominal. Bulkley's record of 12,729 male admissions to the Presbyterian Hospital, New York, gives 13 examples of malignant tumor of the testis, of which 11 were situated in the scrotum and 2 in the abdomen. Combining these statistics shows that of 182,729 admissions to general hospitals, there were 116 cases of sarcoma of the testicle, 12 of which occurred in the undescended testicle, only 3 of these occurring in the intra-abdominal testicle.

At the Hospital for Ruptured and Crippled Children, from 1890 to 1907, in 59,235 cases of inguinal hernia in the male sex there were found 737 cases of sarcoma of the undescended testis.

As to the influence of trauma upon the development of sarcoma of the undescended testicle, Bulkley states that only two cases of the abdominal type gave a history of direct trauma.

In 42 cases the disease occurred between the ages of 25 and 45 years, and of 114 cases of scrotal sarcoma of the testis as shown by Kober the disease occurred between the ages of 20 and 50 years.

Bulkley's 59 collected cases were classified as follows: 20 were classed as sarcoma, 10 as round-celled sarcoma, 6 as large round-celled sarcoma, 1 as spindle-celled sarcoma, 1 as mixed sarcoma, 1 as myosarcoma, 1 as cystic sarcoma, 2 as teratoma, 2 as epithelioma, 2 as chorio-epithelioma, 7 as carcinoma, 1 as rhabdomyoma, and 5 as cancer.

As to the clinical diagnosis of cancer of the undescended testis, acute abdominal pain is often the earliest symptom, dragging pain in or over the iliac fossæ and objective signs of an acute abdominal lesion and a tumor in the lower iliac fossa.

Before the disease has advanced sufficiently to form a palpable mass it may be very difficult to make a diagnosis, as the condition cannot be differentiated from that of renal colic, appendicitis, or cæcal tumors. If the testis cannot be found either in the scrotum or inguinal canal, and a tender mass is felt in the lower iliac fossa, giving rise to symptoms, the chances are very strong that one is dealing with a malignant ectopic testicle. The prognosis is exceedingly grave.

Bulkley's opinion is that if the individual has one testicle in the scrotum, the abdominal testis should, after puberty, be removed. As to duration of life, the author quotes Chevassu's statistics:

Unknown.....	15 cases
15 days to 1 year.....	38 cases
1 to 2 years.....	17 cases
2 to 3 years.....	9 cases
3 to 4 years.....	2 cases

From his own and other cases the author concludes that cancers of the testis treated by simple orchidectomy, followed by a thorough course of treatment with the mixed toxins of erisipelas and bacillus prodigiosus, have a far better prognosis than those subjected to very extensive laparotomy with removal of the lumbar glands, as advocated by Chevassu and Hinman. THEODORE DROZDOWITZ.

Koll, I. S.: Infections of the Epididymi, with Their Surgical Treatment. *Illinois M. J.*, 1915, xxviii, 11.

The point of most importance that the author wishes to bring out in his consideration of this subject is the difficulty with which certain forms of chronic epididymitis due to either the staphylococcus, streptococcus, or colon bacillus are differentiated from tuberculous infections. The clinical manifestations may be so similar that a final conclusion can be reached only after a careful histological examination of the removed epididymis. The after-care of the patient must therefore depend upon the pathologist's diagnosis. Tuberculin treatment in the hands of competent men has given some excellent results in generalized genital tuberculosis.

Lower, W. E.: Cysts of the Prostate. *Ohio St. M. J.*, 1915, xi, 430.

Lower states that cysts of the prostate either are extremely rare, or they are not readily recognized, if we are to judge from the comparatively small number of cases reported in the literature.

The author's case was a man 51 years old who complained of difficult urination, dating his trouble to a period eight years before, when after an operation for mastoiditis, he had some slight trouble with his bladder at which time his bladder was irrigated. For the preceding year the flow of urine had been obstructed, the difficulty of urination having increased steadily, becoming very much worse during the last six months. He was unable to empty his bladder completely, had a frequent desire to void, and had slight dysuria.

A cystoscope was easily introduced into the bladder; the capacity was found to be 300 ccm.; residual 5 oz. of clear urine. What appeared to be the median lobe of the prostate was considerably enlarged; there was some trabeculation of the bladder. Hypertrophy of the middle lobe of the prostate was the diagnosis, and prostatectomy was recommended.

Under complete anoci-association suprapubic cystotomy was done and upon exposure of the prostate a tumor mass the size of the end of the thumb was disclosed protruding from the prostatic portion of the urethra. It was covered with mucous membrane, and the blood-vessels radiating over made it appear not unlike the prostatic growths so frequently seen. Upon attempting to remove it it suddenly ruptured and viscid fluid escaped. By gentle manipulation the sac was removed. It was distinctly the wall of a cyst. The bleeding was slight. The usual technique of prostatectomy was employed. The patient is making an excellent recovery and has had no trouble since.

In 1907, Cabot classified prostatic cysts as follows: (1) echinococcus; (2) retention cysts due to distention of occluded prostatic glands; (3) cystic dilatation of the utricle; and (4) cysts or cystic cavities in connection with cancer of the prostate. Lower also reviews abscess cysts, calculous cysts, proligerous cysts, and others.

Poor general hygienic conditions, fatigue, and poor health have been considered etiological factors in prostatic cyst formation. The most commonly noted symptoms of the condition are: difficulty of urination, frequency, difficult defecation, and retention. The diagnosis is not always easy; cystoscopic pictures furnish the most evidence in typical cases. The treatment consists in opening the cyst through an operating cystoscope, or if very large, excision, as in the case mentioned above.

H. W. E. WALTHER.

Judd, E. S.: Surgical Pathology of the Prostate. *J.-Lancet*, 1915, xxxv, 380.

Judd briefly reviews the anatomy and surgical pathology of the prostate gland and follows with a discussion of the technique employed at the Mayo clinic in the operative treatment of the obstructing prostate. The development of the prostate gland from five independent groups of tubules, constituting the five lobes of the gland, is described and illustrated with drawings from Lowsley's work. Judd states that the subtrigonal and subcervical glands of Albarran are rarely seen and have not been of great clinical importance in his experience. He limits his discussion of the surgical pathology of the prostate to three conditions: (1) adenomatous hypertrophy, (2) carcinoma, and (3) malignant degeneration.

Adenomatous hypertrophy is reported as occurring in 34 per cent of men who reach 60 years of age, though it is symptomless in 15 per cent of cases. The degree of development of the adeno-

mata varies markedly and the obstructive symptoms produced do not vary directly in proportion to the size of the adenomatous growth. This form of hypertrophy involves chiefly the median lobe, but the lateral lobes are also involved. Hypertrophy of the posterior lobe is seldom, if ever, seen, while carcinoma probably always begins in the posterior lobe. Cancer of the prostate, if it exists alone, may cause few or no urinary symptoms until late, since the process is infiltrative, extending beneath the trigone along the seminal vesicles, and does not in the early stage project into the urethra or bladder. In about 50 per cent of cases carcinoma and hypertrophy are associated. The obstructive symptoms are then due to enlargement of the median and lateral lobes. When benign hypertrophy and cancer exist together, the cancer is usually confined behind the capsule which separates the lateral and posterior lobes, although as the malignant process extends it breaks through the capsule into the benign hypertrophy.

In studying 700 specimens of prostate, Wilson and McGrath found many areas indicative of change of the hypertrophied process to malignancy, although in no instance was there a positive case showing that benign hypertrophy had become malignant. Cancer of the prostate is probably much more common than is generally believed, because it is infiltrative, and not ulcerative, in character. Many of these patients die of metastatic carcinoma without the location of the primary focus being discovered.

The first and most important part of the treatment consists in overcoming as much as possible the secondary changes produced by the deformed gland. These changes result from the interference with complete emptying of the bladder. The knowledge gained by the more recent investigations regarding the part of the gland most often affected, and its relation to the bladder and sphincter muscle, has caused most men to decide in favor of the suprapubic or transvesical operation. The most serious objection to this route is the danger of infection of the cellular tissue of the space of Retzius. An attempt has been made to develop a technique which minimizes the danger of this infection. The bladder is cleansed, the catheter is left in place, and the bladder opened dry. The adenoma is enucleated in the usual way and the cavity packed with gauze. The bladder is then retracted with three Walker

retractors, the end of the catheter is drawn out of the suprapubic wound, caught with a clamp, and held to one side. The gauze is removed from the prostatic capsule, and the bladder edges of the capsule are sutured with firm plain catgut. No attempt is made to catch the torn-off end of the urethra, but the needle is passed as deeply as possible into the prostatic tissue. This suture serves in many cases to check the oozing. The clamped end of the catheter is left out of the suprapubic opening in the bladder and the bladder closed tightly around it. A good sized hole is cut in the side of the catheter near its entrance into the urethra. As soon as the urine is free from blood the catheter is drawn into the bladder and left for several days. H. A. FOWLER.

MISCELLANEOUS

Crockett, F. S.: Source of Blood in the Urine. *Indianapolis M. J.*, 1915, xviii, 240.

The determination of the source of blood in the urine is often a very difficult problem. The following are possible causes:

1. Kidney and ureter: wounds, injuries to loin, stone, pyelitis, acute nephritis, hæmorrhagic nephritis, chronic nephritis, tumors, tuberculosis.
2. Bladder: wounds, injuries to pelvis, stone or foreign body, due to stricture or enlarged prostate, cystitis, tuberculosis, new-growths, bilharzia.
3. Prostatic urethra: stone, posterior urethritis, tumors, tuberculosis.
4. Anterior urethra: rupture, urethrotomy, fracture of pubis, anterior urethritis. Certain diseases are responsible for general changes resulting in bloody urine: smallpox, typhoid fever, purpura, yellow fever, plague, phosphorus poisoning, hæmophilia, leukæmia, and malaria. FRANK HINMAN.

Rosenbloom, J.: A Further Study of the Chemical Composition of Urinary Calculi. *J. Am. M. Ass.*, 1915, lxxv, 161.

The author has analyzed a series of 26 renal stones, with findings similar to those of his first series of 25 calculi. In the present series, but two stones were of the uric acid variety, the others being composed largely of calcium salts, the oxalate predominating.

He emphasizes the importance of a correct conception of the constituents of calculi as a means of adopting a rational therapeutics. S. W. MOORHEAD.

SURGERY OF THE EYE AND EAR

EYE

Macleish, A. C.: Keratitis Caused by Infection with Bacillus Coli. *Arch. Ophthalm.*, 1915, xliv, 403

Macleish reports a series of five cases of vesicular keratitis caused by infection with bacillus coli. In each case a chronic cystitis accompanied the eye trouble and a pure culture of bacillus coli was obtained from the urine of each patient. In addition one patient showed a pure culture of bacillus coli from the aspirated contents of the anterior chamber.

The cornea in these cases appears diffusely clouded. Focal illumination shows the surface of the cornea covered with minute vesicles. There are also some small blebs in the corneal epithelium and depressions where they have ruptured. The patient complains of pain only when blebs are present.

The treatment consists in the use of urinary antiseptics combined with the administration of an autogenous vaccine made from a culture of germs found in the patient's urine. The patient in addition is put on a buttermilk diet. Atropine is used locally in the eyes with the occasional use of holocaine to control the irritation. The author advises that in all cases of affections of the eye of obscure origin, the excreta and particularly the urine of the patient be examined for bacteria.

J. A. WINTER.

Bistis, J.: Clinical and Experimental Investigations on the Etiology of Heterochromia. *Arch. Ophthalm.*, 1915, xliv, 433.

Heterochromia is either congenital or acquired. In the former case in one eye the development of pigment in the stroma ceases in the first years of life. In the latter case the iris becomes decolorized without visible cause after the pigmentation in the stroma has become fully developed. Cataract formation and posterior corneal deposits are often found in the heterochromic eye, indicating the presence of a pathologic process.

Recent investigation has shown that lighter-colored eyes have symptoms of sympathetic paralysis, such as ptosis, miosis, and half-sided facial atrophy on the same side.

The author suggested that heterochromia could be a consequence of paralysis of the sympathetic nerve and made this the basis of animal experimentation. The right superior cervical ganglion in the rabbit was extirpated in a series of cases and the subsequent condition of the right eye noted. In a typical case there was miosis, narrowing of the palpebral opening, and slight exophthalmos; the intra-ocular tension was unchanged; the right iris

was distinctly paler than the left; cocaine instilled into the right eye caused no dilatation of the pupil.

The histological change, in brief, consisted in a distinct diminution of the pigmentation in the iris stroma and new formation of fibrillary connective tissue in the stroma. There was also thickening of the blood-vessel walls, and the whole pathologic process was distinctly inflammatory in nature. The author concludes by stating that the clinical and experimental observations justify the conclusion that heterochromia is caused by a paralysis of the cervical sympathetic.

J. A. WINTER.

EAR

McKenzie, D.: Epithelioma of Auricle Treated by Diathermy. *Proc. Roy. Soc. Med.*, 1915, viii, *Otol. Sect.*, 65.

The growth, which caused severe pain, involved a large surface of the auricle and had led to destruction of about one-third of the pinna. It had also extended to the mastoid region.

Under chloroform the growth was treated by diathermy. The result has so far proved satisfactory. The diseased tissue was apparently all removed and the ulcer which had formed is rapidly contracting and healing. The patient has had no pain since the operation.

OTTO M. ROTT.

Patterson, N.: Operation for Epithelioma of the Auricle with Secondary Involvement of Glands. *Proc. Roy. Soc. Med.*, 1915, viii, *Otol. Sect.*, 64.

The patient had a small growth on the pinna with well-marked enlargement of the cervical glands, and there was a large hard mass over the upper part of the jugular vein, underneath the sternomastoid.

The operation consisted in removal of the auricle, together with a very free dissection of the neck. The internal jugular and also portions of the sternomastoid muscle and parotid gland were removed. The glands, fascia, etc., were taken away in one mass. In order to avoid trouble with the internal jugular in the upper part of its course, the lateral sinus was exposed early in the operation and a tampon of gauze placed between it and the skull wall. There has been no recurrence, now three years since the operation.

OTTO M. ROTT.

Mollison, W. M.: Case of So-called Primary Acute Mastoiditis. *Proc. Roy. Soc. Med.*, 1915, viii, *Otol. Sect.*, 62.

The patient, aged 4, had for four days had a swelling over the right mastoid. The right ear

had ached ten days before, but there had been no discharge. The right auricle was displaced downward and forward, and over the mastoid process there was a red fluctuating swelling, scarcely tender; the tympanic membrane was normal. At operation, pus was found in the mastoid process, and sticky pus in the antrum. Cultivation showed a pure growth of pneumococcus. OTTO M. ROTT.

Hetrick, L. E.: Atypical Mastoiditis. *J. Ophthalmol. & Laryngol.*, 1915, xxi, 505.

In order to be able to recognize a case of atypical mastoiditis or one in which the usual classic symptoms are wanting, the author advises that a watch be kept for any of the following symptoms:

1. A discharging ear lasting over four to six weeks.
2. A sudden diminution or cessation of the discharge.
3. Pain and tenderness over the mastoid.
4. Bulging of the drum membrane and superior posterior wall of the external canal.
5. Tenderness, thickening, and immobility of the tissues over the mastoid on the afflicted side.
6. Post-auricular swelling.
7. Swelling below the ear.
8. Sudden change in temperature.
9. Facial paralysis.
10. Symptoms of labyrinthine involvement.
11. Persistent headache on the same side.
12. Symptoms of intracranial complications.
13. A healed drum membrane which continues dull, lusterless, thickened, and bulging.

OTTO M. ROTT.

McKenzie, D.: A Note on Mastoid Grafting. *Proc. Roy. Soc. Med.*, 1915, viii, *Otol. Sect.*, 47.

McKenzie practices immediate grafting, and retains the graft in position by allowing the cavity to fill with blood. The coagulum retains the graft perfectly in position, and packing is therefore unnecessary. Care must be taken to make sure that bleeding from the osseous surface under the graft is not taking place. The clot begins to disintegrate four to five days after the operation, and when that process is completed, the graft will have sown cells over the surface. OTTO M. ROTT.

Wolfe, C. T.: The After-Treatment of the Mastoid Wound. *Louisville Month. J.*, 1915, xxii, 10.

The author discusses the after-treatment of the wound following simple mastoid operation. His

procedure consists in first suturing the wound at the upper portion only, using sutures of silkworm gut. The sterile gauze dressing is preferred to the blood-clot method because of the uncertainty of the latter. The gauze is inserted with considerable firmness to control hæmorrhage and to promote drainage.

The primary dressing is changed on the fourth or fifth day in the following manner: After removing the bandage and before removing the gauze packing, the area surrounding the wound is thoroughly cleansed with sterile water and peroxide. Then the gauze is withdrawn and the wound gently cleansed with sterile cotton held by a pair of dressing forceps, sterile gauze is inserted and the sutures removed. Subsequent dressings are changed every second day until the wound is well filled with healthy granulations, when gauze is supplanted by boric acid. If there is a discharge of pus from the external canal a gauze strip is inserted. If healing is delayed because of necrotic bone, the area should be curetted or a secondary operation performed.

OTTO M. ROTT.

Turner, N., and Lake, R.: Pyrexia After Mastoid Operation for Acute Otitis Media. *Proc. Roy. Soc. Med.*, 1915, viii, *Otol. Sect.*, 53.

At the time of operation the patient's temperature was 102° F. After the operation the temperature dropped to 99°, but on the second day rose to 103.6°. The wound looked satisfactory and after dressing the temperature fell one degree, rising in the early afternoon to 104° and falling again at night to 101°. The next morning the temperature again rose to 103.2°, falling a degree and a half in the afternoon and rising to 103° again at night. After that the temperature gradually and steadily fell to normal.

The authors were quite convinced that they had to deal with a case of threatening meningitis; but the patient recovered in spite of their non-interference.

OTTO M. ROTT.

Kelson, W. H.: Operation for Ménière's Symptoms. *Proc. Roy. Soc. Med.*, 1915, viii, *Otol. Sect.*, 56.

The patient was unable to work because of giddiness of aural origin. Over a year ago the operation of uncapping the external semicircular canal on the right (deaf) side was performed, since which time the giddiness has disappeared and the patient is able to be at work and is feeling perfectly well.

OTTO M. ROTT.

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Fetterolf, G.: Hæmorrhage from the Nose and Throat. *Penn. M. J.*, 1915, xviii, 793.

The author discusses (1) nose-bleed, (2) hæmorrhage following tonsillectomy, and (3) non-traumatic hæmorrhage originating in the throat.

1. In epistaxis, all packing and clots should be removed, and the pharynx inspected to determine the amount dropping from the nasopharynx. The anterior portion of the septum should then be inspected; if no bleeding point is found there the anterior portion of the middle turbinate should be examined. Having found the spot, cauterizing with chromic acid or applying a disc of cotton soaked in tincture of benzoin is usually effective. Bellocq's cannula is rarely necessary unless the bleeding is from the nasopharynx.

2. As a means of preventing hæmorrhage following tonsillectomy, the author advises that the patient be in a hospital the night before and the day following operation; all bleeding should cease before the patient leaves the table and to facilitate this the fossæ should be swabbed with 10 per cent silver nitrate solution; should this not stop the bleeding, the bleeding points should be seized and sutured and the cavity patched with gauze wrung out of 10 per cent silver nitrate solution and sutured in place for 24 hours. If hæmorrhage occurs after the patient is in bed, hæmostats should be applied for five minutes; if bleeding again occurs they should be replaced; and if there is no cessation by this time the patient should be re-etherized and sutures inserted.

3. In hæmorrhage from the throat of non-traumatic origin, the author has only seen four cases in which the bleeding could be seen; usually the diagnosis was made of early tuberculosis by examining the chest with the stethoscope. The four cases were: (1) Ragged ulcer of the false cord, (2) bleeding from the tonsil crypt, (3) pedunculated subglottic papilloma, and (4) varix on the upper surface of the soft palate.

OTTO M. ROTT.

Delavan, D. B.: The Effects of Radio-Activity upon Nasopharyngeal Fibroma. *Med. Rec.*, 1915, lxxxvii, 1056.

The author states that the effects of radio-activity upon nasopharyngeal fibromata are encouraging and give promise of future successes.

He describes the methods employed by Abbe:

A tube of celluloid about three-sixteenths of an inch in diameter and with one end closed like the end of an ordinary test-tube, is cut to the proper length. In the bottom of the section of tube is put the radium. Upon it is packed a bit of cotton or

gauze to keep it in place. The end of a handle made of stout wire is thrust into the tube, and the tube is secured to the handle by a wrapping of adhesive plaster. For the protection of the normal parts, a piece of thin sheet lead, of proper size and shape, is adjusted to the outside of the tube and retained in place by a sufficient wrapping of India rubber gauze, the side covered by the lead being directed away from the tumor.

In using this device one of the nasal cavities of the patient is first locally anæsthetized and the radium carrier, properly lubricated, is then passed backward through it until the radium is brought into proper relation with the growth.

OTTO M. ROTT.

Roth, J. B.: The Nasal Septum. *Northwest Med.*, 1915, vii, 223.

After an anatomical introduction, the author mentions the following types of deflections:

1. A thickened or deflected incisor crest on one or both sides.

2. A vertical ridge in the quadrilateral cartilage a short distance posterior to the anterior border.

3. A deflected anterior border into one nostril.

4. A general convexity of the septum on one side.

5. The whole septum may be thickened or only the upper portion opposite the middle turbinate.

6. A vomer cartilaginous deflection where the cartilage slides down out of the V-shaped groove of the vomer into one or the other inferior meatus, causing almost a sharp angle and a convexity to the opposite side.

7. Crest deflection with tilting of the vomer cartilaginous joint into the nares of the convexity. In this form of deflection a sharp horizontal crest is found on the opposite side which has the appearance of a spur.

8. Some authors speak of spurs without any deflection. If they are on the cartilage they are called ecchondrosis. If they occur on the osseous portion of the septum, they are called exostosis. They are very rare.

The following are mentioned as causes of deflections: mouth breathing from nasopharyngeal obstruction, irregular and delayed dentition, and imperfect or unsymmetrical development of the upper jaw.

The symptoms are of a catarrhal or reflex nature.

The treatment recommended is submucous resection, for the proper performance of which the following points are mentioned as of essential importance:

1. The field of operation must be thoroughly anæsthetized.

2. The initial incision must begin as high up as possible and extend down to the middle of the floor of the nose.

3. The operator must be absolutely sure that he is under the perichondrium in beginning the elevation.

4. The elevation should be made first upward toward the cribriform plate; from which point it should be made backward and downward. After the upper part of the membrane is elevated well back it should be continued forward and downward. Working backward over a deflection usually results in a perforation.

OTTO M. ROTT.

Townsend, I.: A Practical Method of Correcting Septal Deformities. *J. Ophthalm., Otol. & Laryngol.*, 1915, xxi, 516.

The author's method is applicable to those cases in which there is a ridge of bone along the articulation of cartilage and the maxillary crest, and is based upon the supposition that the ridge crowds out of place the more resilient cartilage. The technique is as follows:

1. A broad Hajek or bevel-edged chisel is inserted under the ridge, including the crest and chisel, directly backward to the vomer along the floor of the nose.

2. A flap is peeled up over the surface of the exostosis by means of a periosteal elevator.

3. A chisel is inserted and a wedge of bone pried out, the adherent membranes being loosened.

4. The cartilage is pushed somewhat past the medial line and some strips of lintine applied to keep it in place. Should the deviation extend to the vomer or ethmoid plate the blade of an Adam's forceps is inserted on the convex surface and the anterior edge cracked.

The advantages of this technique are:

1. It is simple and can be done in ten minutes.

2. There is little chance of sloughing of the flap and no danger of perforation.

3. It conserves to a greater degree the integrity of the mucosa.

4. It leaves a healthy membrane free from non-secreting dry spots.

5. It is applicable in 50 to 60 per cent of the cases of septal deformity.

OTTO M. ROTT.

Berry, H. M.: Radiography in the Diagnosis of Diseases of the Accessory Nasal Sinuses. *Arch. Röntg. Ray.*, 1915, xix, 419.

Berry gives an extended review of the development of the various examinations, and notes the variations of opinion as to the best relative positions of patient, tube, and plates.

He always examines the patient seated upright, noting among other reasons, the more favorable view of a partially filled frontal sinus; the fluid assuming a level instead of being evenly spread out, as in the face-down position.

After describing in detail his apparatus for examining the dry skull, and another for the examina-

tion of the living subject upright, Berry gives an extended study of findings in several dried skulls.

The illustrations are correlated with lettered diagrams for interpretation. The article is a worthy addition to the technique of röntgen study of the sinuses, and is of especial value for reference.

DAVID R. BOWEN.

Thomas, J. B.: Tuberculosis of the Frontal Sinus. *J. Am. M. Ass.*, 1915, lxxv, 308.

A general reference to tuberculous sinusitis in general is made, following which the author briefly describes the five cases of tuberculosis of the frontal sinus hitherto published and two cases of his own.

As a result of his study of the subject the author draws the following conclusions:

1. There are several factors that tend to protect the frontal sinus from tuberculous infection, including such common factors as the cilia, mucus, tears, and the bactericidal action of the mucous membrane, supplemented by the high position and natural drainage of the frontal sinuses.

2. Tuberculous sinusitis occurs much more frequently than is recognized.

3. The diagnosis depends on careful bacteriologic examination of the sinus secretion in suspected cases, securing as large a quantity of secretion as possible and using sedimentation. The so-called antiformin method is a good one. A minimal inoculation should be resorted to if the simpler methods fail.

4. Tuberculin is a valuable diagnostic aid.

5. In more advanced forms of tuberculous frontal sinusitis, the middle turbinal and adjacent ethmoid cells are apt to be involved, and sections of mucous membrane or fungoid growth may demonstrate typical tubercles or giant cells. Fungoid and cheesy degeneration of the lining of the sinus, even in the absence of demonstrable tubercle bacilli, has a high diagnostic value.

6. The symptoms do not differ from those of simple chronic sinusitis until advanced bone involvement or general tuberculosis add their factors to the symptom-complex.

7. A history of previous bone disease in a tuberculous subject suffering from chronic sinusitis should lead to the suspicion of infection of the bony walls of the sinus. A negative Wassermann reaction lends great weight to the differential diagnosis.

8. Treatment should be early and surgical.

OTTO M. ROTT.

Lothrop, H. A.: Frontal Sinus Suppuration; Results of New Operative Procedure. *J. Am. M. Ass.*, 1915, lxxv, 153.

The author reports seventeen cases illustrative of his method of operating upon the frontal sinus in those cases where preliminary intranasal treatment fails to cure, in all cases of fistulæ, and in all cases in which an external operation is required. The advantages of this operative procedure are that all steps of the operation are open to inspection, a

minimum scar results, and maximum opening into the nose persists.

Röntgenologic study should be made both in the anteroposterior and lateral positions as an aid to diagnosis and to determine the anatomic characteristics of the sinus. After placing a pledget of cotton wet with epinephrin (1:2000) and 4 per cent cocaine in each anterior ethmoid region, the patient is etherized and placed in a position half way between sitting and supine. The pledgets of cotton are then removed, the nasal cavities tamponed from the posterior nares, and ether administered through a tube entering the mouth. The eyebrow is not shaved. A single, curved one-inch incision limited by the supra-orbital notch is made in the inner portion of the eyebrow, the periosteum is elevated, the sinus entered with the chisel and enlarged by rongeur forceps to make an oval opening three-fourths inch long.

With a curved probe passed through the ostium into the nose as a guide, a small curved curette is passed down from above in front of the probe to break up the walls of the cells on the floor of the sinus, constantly avoiding the posterior angle of the sinus on account of the proximity of the anterior end of the cribriform plate to the ostium frontal. The dense bone is all reamed out by the use of rasps and burr drills passed from above and below cutting forward and laterally.

By perforating the interfrontal septum the other sinus may be explored and by means of the burr the perpendicular plate of the ethmoid is removed and the dense bone under the other sinus burred and rasped away until there remains only a thin shell of bone around the whole circumference of the floor of the sinus in front.

The skin incision is closed without drain, all tampons removed, and a compress bandage applied for a day or two.

ELLEN J. PATTERSON.

Syme, W. S.: The Treatment of Nasal Accessory Sinus Disease. *Practitioner*, 1915, xciv, 789.

In cases of acute suppurative sinusitis which cannot be relieved in a few days by local treatment to reduce the congestion and swelling of the mucous membrane around the opening of the sinus into the nose, the author uses lavage carefully carried out. With a view to prevention of recurrence he removes the middle turbinate in part or wholly, if it has not already been removed, in all cases of sinusitis.

Chronic sinusitis must be treated surgically. In ethmoidal disease the cells should be obliterated intranasally by means of the ring curette working from behind downward and forward, with firm pressure on the curette.

Surgical measures must be instituted in all cases of maxillary sinusitis where pathological conditions of the teeth and nose have received attention and repeated lavage fails to relieve the condition. The technique is as follows: Under local anaesthesia, after removal of the anterior end of the inferior

turbinate, the author opens the antrum through the canine fossa; removes the membrane completely; makes a counteropening into the nose from the antral side through the naso-antral wall in the lower anterior part and turns the flap of mucous membrane from the nose to cover the rough surface between the floor of the nose and the antrum. He closes the mucous membrane in the canine fossa with catgut. After-treatment consists in careful douching of the nose and washing out the antrum daily for a few days.

In cases of frontal sinusitis the operative procedure must be adapted to the case. Either the intranasal or external operation is used, whichever method will best remove the disease, prevent recurrence, and cause as little disfigurement as possible.

Sphenoidal sinusitis is treated by removing the anterior wall completely and curetting the lining with care along the external wall and especially along the roof.

The author's treatment of recurrent catarrhal sinusitis is climatic together with constitutional treatment in the way of proper food, clothing, and exercise, and correction of any local condition in the nose which tends to cause a congestion of the nasal mucosa.

ELLEN J. PATTERSON.

McCullagh, S.: The Treatment of Ethmoiditis. *N. Y. M. J.*, 1915, cii, 178.

The author divides cases of ethmoiditis into acute and chronic types and an intermediate transition stage called subacute, in which vaccine therapy is satisfactory. Acute cases may be catarrhal or suppurative, in either of which the essential step is drainage, best secured by treating the offending rhinitis by means of adrenalin in weak solution or better still steam inhalations charged with the fumes of menthol. Obstructions such as enlarged anterior ends of the middle turbinate and deflected septum should be removed. Where complications of a grave nature threaten, the second step of the Killian operation for frontal sinusitis is advised as an external operation.

Chronic cases may be hypertrophic, atrophic, suppurative, specific, and tuberculous. Chronic hypertrophic ethmoiditis, the kind characterized by polypoid formations, is amenable to conservative and radical procedures depending upon the degree and stage of the pathological change. Removing obstructions to drainage, as middle turbinectomies and septal deflections, is considered conservative treatment.

Usually a period of watchful waiting is advisable during which the effect of conservative measures are noted, before determining on a final course of action. Where polypoid formation is scarcely discernible, procuring of drainage and applications of silver nitrate usually suffice. When polypi form, their removal together with their bony base is essential, and this is followed by silver applications. In the treatment of advanced cases where radical changes

have occurred in the ethmoid bone, radical extirpation is demanded.

Chronic atrophic rhinitis demands a radical operation to limit the crusting.

Chronic purulent ethmoiditis demands radical procedures unless the condition is a recent infection of an early chronic hypertrophic case, when conservative treatment such as suction and vaccines may be sufficient. The specific type should not be attacked until all active manifestations of the primary disease have disappeared.

In tuberculous ethmoiditis the treatment should depend largely upon the general condition of the patient and the influence that the ethmoid infection is having upon the general health.

As to the radical operation itself, the procedure of Mosher is given preference, and no post-operative packing is used, unless necessary because of hæmorrhage or the remoteness of the patient from ready sources of skilled assistance. OTTO M. ROTT.

Hett, G. S.: Inflammatory Disease of the Maxillary Antrum; Its Diagnosis and Treatment. *Practitioner*, Lond., 1915, xciv, 40.

In making a diagnosis it is not sufficient to determine whether the inflammation is acute or chronic, but it is very important to ascertain the exact condition of the mucous membrane lining the cavity.

While the author admits that the various recognized tests taken singly are liable to fallacies, yet by combining the X-ray treatment as a routine measure with transillumination, together with anterior and posterior rhinoscopy and a careful consideration of the history and symptoms, he has been able to arrive at accurate conclusions.

A table of a clinical classification of infected antra, together with the accompanying physical signs, appears with the article.

A consideration of the results of transillumination and X-ray treatment reveals the following four different combinations:

1. Antrum clear by both methods.
2. Antrum dark by both methods.
3. Antrum clear to transillumination and dark to X-rays.
4. Antrum dark to transillumination and clear to X-rays.

The conclusions the authors reached concerning these combinations are as follows:

1. When an antrum is clear by both methods it is unlikely that it is the seat of disease.
2. An antrum dark by both methods occurs with: (1) antrum containing pus, (2) chronic degeneration of mucosa with pus, (3) antrum previously operated upon, and (4) with a neoplasm.
3. An antrum clear to transillumination but dark to X-rays occurs: (1) when polypi are present, (2) when there has been a radical operation but the cavity is healthy, and (3) when a large dental cyst occupies the antral space.
4. An antrum dark to transillumination but clear to X-rays occurs: (1) when a cavity contains

mucus with no degeneration of mucosa (Cases of septal deflection, which are dark to transillumination, often come under this category.); (2) in cases where there are big face bones. OTTO M. ROTT.

Wilson, W.: Technique of Analgesia in Intranasal Surgery. *Brit. M. J.*, 1915, i, 1083.

The author's technique is as follows:

One hour before the commencement of the operation a hypodermic injection of $\frac{1}{4}$ gr. morphine with $\frac{1}{100}$ gr. atropine sulphate is given and the nasal passages packed with gauze soaked in equal parts of 10 per cent cocaine and adrenalin. At the end of thirty minutes the gauze is removed and a one per cent solution of quinine-ureahydrochloride is injected into the mucosa of the septum or turbinates as the case may be. The nose is again packed with gauze, wrung out of the cocaine-adrenalin solution, and in twenty-five minutes the operation is begun. OTTO M. ROTT.

THROAT

Schoolman, N.: Report of a Case Showing the Bipolar Origin of the Faucial Tonsil. *Laryngoscope*, 1915, xxv, 338.

The author reports a case of a man, 36 years old, who presented an unusual condition in the throat. The right tonsillar fossa was occupied by two fairly large tonsillar masses of equal size separated by a deep transverse recess lined with normal mucous membrane, free from cicatricial tissue or adhesions. A large lymphoid mass was situated at the pharyngeal aspect of the posterior pillar, seemingly a continuation of the upper tonsil. The left side presented similar conditions with the exception that the lower tonsil was smaller and seemed to have undergone involution.

Viewed in the light of Gruenwald's studies regarding the bipolar fetal origin of the faucial tonsil, this case may be considered as an instance of persistence of embryological formations in adult life to an unusual degree. It not only shows distinct tonsillar masses separated by the recessus intertonsillaris but also the process of involution in the left lower tonsil. ELLEN J. PATTERSON.

Roman, D.: The Relation of the Tonsil to the Thyroid Gland. *J. Ophth., Otol. & Laryngol.*, 1915, xxi, 591.

In a series of 2,236 cases of thyroid disease observed by the author, he has found 187 cases in which the history, clinical course, and therapeutic results justify the theory that the thyroid disease followed upon either a direct bacterial infection of nasopharyngeal origin, or from toxic irritation of nearby foci. Further, he states that the anatomical continuity of structure which has been proven to exist between the adenoid tissue and the faucial tonsil and the thyroid body justify the conclusion that tonsillar infections can and do lead to thyroid enlargement through direct infection or toxic

irritation, as the influence of faucial infections on lymphatic glands is recognized.

Infection from the tonsil and peritonsillar regions can be carried to the thyroid over three main routes: (1) by extension through the anatomical passages; (2) by the blood stream; (3) by lymphatics.

The thyroid change seems to be an inflammatory swelling with cellular increase, but no suppurative change, and proper treatment of tonsils and adenoids brings about a prompt resolution of the thyroid hypertrophy. OTTO M. ROTT.

Jervey, J. W.: Vascular Ligation in the Tonsillar Fossa. *South. M. J.*, 1915, viii, 528.

Jervey advocates immediate ligation of the bleeding vessels following a tonsillectomy, and for this purpose employs a Rosenheim tonsil hæmostatic forceps and his own throat ligation forceps. The Rosenheim forceps have a groove on the point of one jaw to hold the ligature, and the ligation forceps are fitted at the end with broken circles placed at right angles to the shaft and so constructed as to open about two-thirds of an inch when the handles are closed. The procedure is as follows:

The Rosenheim forceps armed with a ligature being in place, the first half of the knot is tied. Just above this, the ends of the ligation forceps are easily threaded on the free strands of the ligature; the ligation forceps are carefully pushed down with the threaded strands approximately parallel with the Rosenheim forceps, and the half of the knot which has been turned slides ahead easily, gradually tightening down to the front where the ligature is to be permanently placed. The assistant makes gentle traction on the hæmostatic instrument; the ligation forceps are pushed slightly beyond the latter's tip and the knot is tightened simply by firmly opening and closing the handle of the ligation forceps while strong countertraction is made on both free strands of the ligature held in the other hand. The second half of the knot is completed in the same way. OTTO M. ROTT.

Haseltine, B.: Tonsil Surgery and Voice Function. *J. Ophth., Otol. & Laryngol.*, 1915, xxi, 607.

The prevailing confusion regarding this topic, the author believes to be due to the following factors:

1. Articles upon the subject are usually written to prove or disprove some pet notion of the particular writer and generally with no clear distinction between established fact and airy theory.

2. Medical writers, as a rule, think only in terms of localized anatomy and physiology, with no adequate conception of voice production as an expression of the entire physical and psychical personality.

3. So much of the damage admittedly due to unwise, imperfect or bungling surgery has been charged against surgery, *per se*, that conclusions based upon reported results in such cases are usually of no value.

The author further states his belief in the proposition that the abnormal tonsil is a hindrance to voice function, not only because of the local factors con-

cerned but because of the depressing effect of tonsillar infection upon the system. As a corollary he states that improved vocal quality and power noted by singers after removal of diseased tonsils is often due as much to increased vigor and virility as to changes in the throat itself.

Conditions necessary for material voice improvement following tonsil surgery are: (1) voice imperfection must be due directly or indirectly to tonsil disease; (2) the tonsils must be completely removed without injury to the other tissues of the pharynx; (3) the after-care must be such as to preserve and if possible increase the flexibility of the accessory voice-producing structures. OTTO M. ROTT.

MOUTH

Abbe, R.: Cancer of the Mouth. *N. Y. M. J.*, 1915, cii, 1.

Continual irritation of any part of the sensitive body tissue localizes the outbreak of cancer, if indeed, it be not the actual cause. The author quotes a great surgeon of a century ago as saying: "Surgery is useless if the patient is saturated with rum and tobacco."

From the histories of the last 100 cases occurring in his practice, Abbe makes the following summary: The tongue showed a precancerous condition in 36; inside the cheek 15; gum 21; lip 14; throat 14. Ten of the cases were in women, 90 in men.

All of the men were heavy smokers except one who had cancer of the lip occurring in an old scar from a baseball injury.

One of them denied the use of cigars but acknowledged that he smoked one or two packages of cigarettes daily. Many of them used pipes, which often caused cancer to begin where the pipe end allowed the hot smoke to strike the tongue.

In another review the author found 36 tongue cancers in smokers of cigarettes, only one was a woman who smoked one package daily. One of the worst cases of tongue cancers was in a woman who dipped her toothbrush in snuff and rubbed it briskly upon her tongue enjoying the stinging sensation produced. In three women cancer of the tongue was attributed to rough teeth; another used very hot coffee and frequently burned her tongue.

The author charges nine-tenths of mouth cancers to the use of tobacco, there being a difference in individuals as to the tolerance of nicotine. Of the 100 cases studied 13 chewed tobacco as well as smoked, of the 13 all developed cancer either inside the cheek where the quid was held or on the contiguous tongue and palate.

One cancer of the tongue began opposite large gold and amalgam fillings, possibly induced by a galvanic current.

The author believes that overindulgence in both stimulants and tobacco is becoming less, as business men have recognized the danger of one, and it is the duty of medical men to emphasize the danger of the other. H. A. PORTS.

Roy, D.: Partial Paralysis of the Soft Palate Following Removal of Tonsils and Adenoids. *Laryngoscope*, 1915, xxv, 361.

A study of the literature of the last few years reveals the fact that although many observers have reported cases showing the ill-effects upon the throat following the radical removal of tonsils and adenoids none have mentioned the sequela, paresis, or paralysis of the soft palate.

The attention of the author was called to this sequela by a case in his own practice, in which paresis appeared ten days after operation and continued for two months. The paresis may have been due to an intestinal toxæmia, chorea, or to micro-organisms from the nasopharynx gaining portals of entrance through abrasions of the posterior surface of the soft palate.

The author advises each operator to adopt a technique by which he can accomplish the best results and leave the throat in as normal a condition as possible. He cautions against the removal of adenoids unless they are a menace to the physical well being of the child and against injury to the posterior surface of the soft palate by too large an instrument or faulty manipulation of the finger or instrument in the nasopharynx.

ELLEN J. PATTERSON.

Hybbinette, S.: Treatment of Congenital Defects of the Palate (Beiträge zur Frage von der Behandlung angeborener Gaumendefekte). *Nord. med. Ark.*, Stockholm, 1914, xlvii, No. 15.

The author calls attention to the fact that while the anatomical results after operation for cleft palate are very good, frequently the functional results are not nearly so satisfactory, and he emphasizes the importance of systematic speech exercises after the operation, with massage of the palate at the same time.

There are three different methods of operation in common use at the present time. Brophy's method can only be used in infants up to three months old. At first the two sides of the hard palate are pressed together and held in this position with two or three wire sutures. At a second operation the soft palate is sutured. Disadvantages of the operation are its high mortality and injury to the rudiments of the teeth which is frequently observed. The author has only operated on one case by this method, and the results were not entirely satisfactory. Lane's method is more commonly used; it is similar to the one proposed by Krimer in 1824. Lane too advises operation as soon as possible after birth. A large flap is made on one side, which is turned 180° and then shoved under a loosened flap on the other side and sutured. The author has operated by Lane's method twice on children two months old. In the one patient that he has been able to examine since, the result was very good.

The method most frequently used is that of Langenbeck. The author has applied it in 7 cases. In one case with a very wide cleft he used a method

that is a combination of Lane's and Langenbeck's. He has used this combination in 8 cases with very good results, selecting cases in which Langenbeck's method had been unsuccessfully used or those in which the cleft was so wide that it was improbable that it would succeed. A flap was made on one side that was turned 180° and sutured to a flap on the other side formed by Langenbeck's method. The anatomical and functional results were good in all these cases. This method has previously been used by Moschowitz who has published 14 cases.

A. Goss.

Thompson, G. S.: Nasal Flap and Modified Langenbeck Operation for Cleft Palate. *M. J. Austral.*, 1915, i, 475.

With a view of avoiding the common yielding of the line of sutures which is due to infection, tension, or both, particularly the latter, the author advises the following operation which has the advantage of non-interference with the blood supply:

Flaps are made from the upper aspects of the hard and soft palates and turned down into the mouth, being united in a V-shaped manner, the raw surfaces of the flaps apposing each other. By means of a graduated series of knives and raspatories a flap of any desired width can be made. The width of the flap having been determined, a suitable knife is inserted via the mouth through the cleft into the nasal chamber. It is drawn with some force through the mucoperiosteum of the nasal floor from end to end, the shaft of the knife being kept in contact with the long edge of the cleft, the flaps being then liberated from the bone and brought down into the mouth and united by a few mattress sutures vertically placed, the edge being secured by a continuous cat-gut suture. In this way the lateral incisions and elevation of the periosteum of the roof of the mouth are avoided, conserving the blood supply. This procedure is for the hard palate.

In regard to the soft palate, a very necessary but most defective step undertaken in present-day operations is the inevitable section of the tensor and even the levator palati and the separation of the nasal portion of the soft from the hard palate. These two factors probably account for the greater part of the common after-trouble in phonation. This the author seeks to overcome in the same manner as in the hard palate by drawing the tip of the soft palate forward on to the hard palate and making a longitudinal incision on its nasopharyngeal surface through half its thickness. The incision follows the nasal section of the hard palate. The flaps are raised and brought down into the mouth, two palatal incisions being united at the posterior border of the soft palate by curved scissors. This converts them into one long incision and the flap extends on the upper aspect of the hard and soft palates along the whole length of the fissure. By this means the blood supply is conserved, the muscles are scarcely interfered with, and tension is avoided.

H. A. PORTS.

Hecker, F.: The Study of 250 Stained Blood-Films in Pyorrhœa Alveolaris. *A. J. Med. Sc.*, 1915, cxlix, 889.

This study is reported to show that tinctorial changes and increase of the large lymphocytes are common findings in stained blood-films made from patients affected with pyorrhœa.

The differential count showed an increase in the large lymphocytes and the irritation forms of Ehrlich, while the polymorphonuclear neutrophiles and small lymphocytes were diminished in number.

For the past two and one-half years the author has made a routine blood-film examination of all his patients suffering from pyorrhœa, the findings as well as the clinical picture being recorded. Wright's blood stain was used as described by him.

The interesting features noted were the wide variation of the stained nuclei and cytoplasm of the leucocytes; the morphological changes of the nuclei and cytoplasm; the increase of the large lymphocytes and irritation forms of Ehrlich, with coincident decrease of the polymorphonuclear neutrophiles, and small lymphocytes.

The polymorphonuclear neutrophiles were present in 45 to 60 per cent of cases; large lymphocytes in 15 to 30 per cent; small lymphocytes in 5 to 15 per cent; eosinophiles in 1 to 3 per cent; mast-cells in 1 to 2 per cent; transitionals in 1 to 3 per cent; irritation forms in 3 to 10 per cent; degenerates variable in number.

The large lymphocytes showed a wide variation in the intensity and shade of the nuclei, varying from intense reddish violet to pale, or from intense blue to very pale blue. In other specimens the nuclei were faintly stained and at times scarcely discernible. The nuclei contained granules of variable size and shape having no definite arrangement, as a rule staining in the same manner as the nuclei but slightly darker.

The cytoplasm also presented variations in staining qualities, some being reddish violet while others in the same field were pale blue. They varied in size and shape as well; in some the nucleus was centrally placed, in some eccentrically, varying from round to semilunar in shape.

The nuclei of the polymorphonuclears showed variations in staining quite similar to the large lymphocytes, at times the nuclei being formed free from surrounding cytoplasm. Within the nuclei granules and dust were found which stained much the same as the granules of the large lymphocytes.

These changes and others, together with the changed proportion of the different varieties of leucocytes may form a basis of study as to the cause of pyorrhœa alveolaris.

H. A. PORTS.

Fossier, A. W.: Pyorrhœa Alveolaris as a Cause of Systemic Disturbances. *N. Y. M. J.* 1915, cii, 286.

The author is of the belief that many cases of septic fever of unknown origin and conditions diagnosed as malignant endocarditis as well as

many deaths attributed to acute septicæmia would have been correctly diagnosed if the oral cavity had been examined. He deplores the fact that the oral cavity receives little attention from physicians, that it is ignored by our textbooks and colleges.

His review of the literature revealed many deaths due to alveolar abscess, tooth extraction, and septic oral conditions.

The first fatal case reported due to decayed teeth was by Vigla in 1839.

Chassaignac in 1859 called attention to the possibility of general septicæmic infection produced by putrid products of the gums. Lejars in 1895 spoke of a dental cachexia. W. D. Miller in 1890 disproved the idea that bacteria and putrid matter were destroyed in the stomach, it being true that they are destroyed by the gastric juices, but the stomach when at rest is free from its secretion.

Hunter's thesis of 1904 is reviewed and conclusions drawn, the substance of which is that streptococcal and staphylococcal infections any where in the body may have their origin in the oral cavity.

C. H. Mayo interestingly stamps pyorrhœa as the cause, not the result, of systemic disturbances. Appendicitis being caused by septic oral conditions has been confirmed by the bacteriological investigations of Lauz and Tavel.

Tabulations of cases reported show that tooth extraction has a comparatively high death-rate and that all cases presenting pus should be afforded free drainage until danger from infection has passed.

Two cases are reported, one a woman of 26 years, who had formerly been healthy and whose history was negative. She had occasional attacks of headache and languor, was anæmic, and had two attacks of arthritis. The author was called to see her on the seventy-eighth day of continuous fever. Two weeks previous she had had a misplaced tooth extracted. Drugs, bacterins, and phylacogen had been given to no avail. A dental surgeon was called who found pyorrhœa quite general in her mouth. She had retinal and skin hæmorrhages. Her condition improved under general mouth hygiene, but a radical treatment was not instituted on account of her condition and low vitality. She succumbed after two attacks of purpura.

The other case was one of chronic pleurisy with empyema, which recovered after resection of two ribs. As no other cause could be found, an existing pyorrhœa was taken to be the etiological factor.

Leebknecht of Berlin mentioned two unpublished cases, one a nun who died three months after tooth extraction, the other a nurse, who expired six weeks after a slight operation. Both suffered from pyorrhœa alveolaris. At autopsy small abscesses were found in every organ.

H. A. PORTS.

Turner, J. G.: Recent Work on Dental Surgery. *Practitioner*, 1915, xciv, 885.

Turner reviews the work recently done in dental surgery some of which is abstracted as follows:

ZENDER asserts that by means of a stereogram-

matical method, using X-rays, he can reconstruct, practically within a fraction of a millimeter, the bones of human beings, and will use this method to ascertain the reality of a falsity of claim made by some to widen the floor of the nose and straighten the septum by expansion of the dental arch.

HENDERSON reports numerous cases of erratic hallucinations following the use of cocaine as a local anæsthetic, even when induced by pressure into the dental pulp, and warns practitioners against its use unless a third person is present.

CAILLOW describes a method of facial restoration by means of a preparation of formalized gelatine thickened with kaolin, the false part is colored and fixed in place by means of a varnish cement.

MOREAUX advocates the treatment of chronic suppuration of the antrum by means of heated iodoform introduced through a tube passed through the socket of an extracted tooth.

FREG believes there is a relationship between tuberculosis and dental cysts.

ZNAMENSKY argues that pyorrhœa alveolaris begins as an osteoparesis and that it is a sequence of arteriosclerosis.

H. A. PORTS.

Bannes: Brain Abscess Following Anæsthesia for Dental Purposes (Gehirnabscess nach Zahnerkrankung; Misserfolg der Leitungsanästhesie). *Med. Klin.*, Berl., 1915, xi, 392.

Bannes describes a case in which the mandibular branch of the trifacial was anæsthetized with novocaine-suprarenin for the purpose of extracting several teeth which were in very bad condition. Severe pain along the course of the nerve developed soon after and within two months the patient died of brain abscess. As perfect asepsis in the mouth is almost impossible he thinks it probable that the infection was carried into the nerve sheath during the anæsthesia; he believes that this form of anæsthesia is absolutely contra-indicated in infectious processes in the neighborhood of the mandibular foramen.

A. Goss.

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INTERNATIONAL ABSTRACT OF SURGERY

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COLLECTIVE REVIEW

THE USES OF THE HIGH-FREQUENCY CURRENT IN THE TREATMENT OF TUMORS OF THE BLADDER AND OTHER PATHOLOGICAL CONDITIONS OF THE URINARY TRACT

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ALTHOUGH the high-frequency current had been in use for a number of years, it was not until its power to destroy tumors became an established fact that it became of practical value in its application to pathological lesions of the urinary tract.

The high-frequency current was discovered by two Americans, Tesla and Elihu Thomson (1). Morton (2) in 1881 produced the static induced current, non-oscillating in character, but the prototype of the high-frequency current. Tesla in 1891 produced the apparatus for very high-frequency effects which was improved a few years later by Elihu Thomson.

D'Arsonval's work in 1893 was solely with high potential currents and Oudin's with high potential, monopolar currents.

The modern high-frequency machine produces two currents: the d'Arsonval, which is a high-frequency oscillatory current with high voltage and relatively high amperage, a bipolar current; and the Oudin current which is an oscillatory, high-frequency current with very high voltage, but with much lower amperage, a monopolar current. An alternating current is supplied by direct connection, or by transforming a direct current. The alternating current enters a coil in passing through which the oscillations are increased. The current is stored in a series of Leyden jars, from which it is given off, the strength of the current being regulated by a rheostat and a spark gap.

These currents were early applied for therapeutic purposes. Large electrodes were employed which gave a diffused action. Some of the cases in which it was applied were: renal colic with one electrode in the bladder and the other applied to the back, various types of cystitis, urethritis, urethral stricture, functional impotence, etc.

Bosquain (3) in his *Paris Theses*, 1900, gave a history of the method of production of the high-frequency currents and their various general therapeutic uses.

Burch (4) showed by experiments the physiological action of the high-frequency current as applied therapeutically and gave indications for its use. These were varied and wide-spread.

Piffard (5), Snow (6), and Mabie (7) reviewed the history of high-frequency currents and their therapeutic adaptations, and Burch (8) added a few experiments.

Wright (9) in 1905 modified the construction of the high-frequency machine.

Somerville (10) successfully treated scrofulous ulcers of the eye with the high-frequency current, and Piffard (11) in 1906 made the first mention of the power of the Oudin current in destroying tissues, in referring to its use in the treatment of malignant or semimalignant tumors of the skin. He stated that the electrode applied to the skin caused little pain at first, but if retained in contact, the parts became hot and painful. The intensity of the current is under control and one can get an effect varying from a slight temporary

congestion to absolute necrosis even in a few seconds in a localized area.

Geyser (12) compared the results obtained with the X-ray and high-frequency current in therapeutics; Piffard (13) described new high-frequency devices which were of interest from the standpoint of electrotherapeutics.

Riviere (14) wrote extensively of the treatment of superficial neoplasms by high-frequency sparks and effluves, and stated that he believed that superficial growths needed only this treatment. Deep neoplasms he also treated successfully when in centers accessible to electrodes, of which he had special ones for the stomach and bladder. He has used this treatment before and after operation and states that it is the method of choice in inoperable cases.

MacKee (15) reported twelve chronic cases of chancroids, as well as several acute cases cured by applications of the high-frequency current. He also cured herpes genitalis ulcers.

Cook (16) mentioned de Keating-Hart at the Paris Surgical Congress, December, 1907. He stated that the high-frequency current was more powerful than galvanism in electrolytic action, more rapid, effected indurated areas, and appeared to have peculiar selective action on morbid cells or cells of lower vitality as well as a stimulating action on healthy cells. He employed the current in reducing tonsils in adults, curing acne, moles, and papillomata. In removing scars he found it superior to the X-rays. Broken down sinuses healed rapidly under its application and hæmorrhoids were easily destroyed.

Riviere (17) in the *Annales d'électrologie et radiologie* for September 1908, stated that in 1900 he called attention to the cytolytic action of high-frequency currents on neoplastic cells, and draws the following conclusions:

1. The high-frequency current cures small epitheliomata of the face.
2. It checks certain cases of malignant disease, especially lymphoid ones, by (1) thermo-electro-chemical action, and (2) by trophoneurotic curative action.
3. It is contra-indicated in large tumors where excision is still the choice.
4. These operations on large tumors ought to be followed immediately by spark and effluve treatment, thus preventing contamination of the wound by carcinoma cells (leading to recurrences), as well as having a curative action on tissues.
5. It is the only means available in inoperable cases.
6. The great amount of nascent ozone liberated is disinfecting and nourishing to the tissues.

He obtained the best results in epithelioma, malignant chancre, rodent ulcer, and cancrroid. He found it stopped the pain's progress—even with nodes involved—and cicatrized lesions. This holds for skin epitheliomata. In epitheliomata of mucosa it is palliative only, but relieves pain.

Riviere found that superficial sarcomata likewise yielded; the deep-seated ones resisted, but even here the progress of the growth was arrested, compression symptoms were alleviated and metastases ceased. It was more effective than X-ray in sarcomata, lymphosarcomata, and fibrous tumors.

In mammary cancer it helped to cicatrize ulcerating areas, destroyed nodosities in skin and glands, and dried up foul discharges.

In incipient tuberculosis: lupus was cured by effluve alone, glandular tuberculosis was first attacked by monopolar or bipolar sparks and the treatment then continued by effluvation alone. Tuberculosis of bones and joints, fungous synovitis, periostitis, caries, with or without fistulæ, showed good results; swelling, pain, and muscular atrophy disappeared. He cited some cures of tubercular orchitis.

Judd (18) treated nævi from the size of the little finger-nail to that of a half-dollar. The Tesla current was used, the patient holding one electrode; the other, a hollow glass rod with copper wire running through and projecting one-sixteenth inch beyond the end of the tube, was held far enough from the surface of the nævus to produce a heavy bombardment of sparks one-eighth to one-quarter inch in length. This was used for one and a half to three minutes, twice a week for three to twelve treatments. The nævus becomes a dry slough, separating at the end of two to six weeks, leaving a smooth red-dened epithelial surface beneath.

He further cites its use in keloid, localized gangrene where a rapid line of demarcation is desired, in perforating ulcers, reduction of enlarged tonsils, destruction of superficial epitheliomata and warty growths.

Riviere's article (19), "Cystolyse alto-frequente et fulguration du cancer," reviews the work on cancer but presents nothing new.

In 1909 mention is made that Marion (20) presented a case of tumor of the bladder treated by fulguration before the Paris Surgical Society. No details or results were given.

Riviere in 1909 (21) in his reply to de Keating-Hart made the following assertions:

1. The high-frequency current should be used at operation to aid the surgeon's knife.

2. The high-frequency current is the only therapy for inoperable cases.

3. The high-frequency spark and effluve exert specific elective action on neoplasm cells of cytolytic power.

4. The high-frequency spark and effluve stimulate the powers of resistance of healthy tissues.

He conclusively proves his priority in the application of the high-frequency spark for the destruction of tumors.

While treating a man for a disease of the nervous system, Riviere (22) asked him to move near one of the wires of the soleroid cage. On one of his fingers was a lesion which had not healed during several years; the wound healed in ten days. Then began his work of applying the high-frequency current, especially the Oudin current, in the treatment of various diseases. He found the use of the condensing electrode of Oudin to be analgesic. In certain skin epitheliomata the effluvial action was more manifest than that of the spark, and it was an aid in operating through the electrochemical action and by the nascent ozone produced.

Thus up to 1910 the high-frequency current had been discovered and it had been found that this current producing from one to two million oscillations per second when applied as a bipolar (d'Arsonval) or monopolar (Oudin) caused a certain beneficial therapeutic action on the tumors of the body, and if applied over a small area produced a destruction of tissue. It had been applied to destroy tumors benign and malignant, and had been applied in the bladder.

However, it had not been used extensively in the urinary tract until Beer (23) in 1910 introduced the electrode of the Oudin current into the bladder through the cystoscope, and thus opened a way to destroying, under sight, tumors of the bladder. He reported two cases, one an inoperable tumor of the bladder in a woman of 81, and the second a papilloma in a woman of 66. The wire was passed through the cystoscope, the spark applied directly to the growth, at first blanching, then blackening the tissues with the production of gas, the growth rapidly disappearing after several applications of a few seconds each several days apart.

Following the case reports of Beer (23), Keyes (24), Buerger and Wolbarst (25), each reported three similar cases with the same results. In one of the latter's cases a single application of a few seconds sufficed to destroy the growth. Buerger and Wolbarst called it a modification of the de Keating-Hart fulguration. They called

attention to the ease with which it could be applied and its superiority over the thermocautery.

In 1911 the writer (26) reported a case of recurrent vesical papilloma, the original growth, the size of a hen's egg, having been removed two years before. A recurrence the following year was destroyed by radium applied through a cystoscope, and the recurrence the following year was cauterized by four applications of a few seconds each of the high-frequency current. Here in one patient the various methods could be compared. The latter method has proved far superior from the standpoint of time of treatment, pain, recurrence, and end-result, there having been but one very small recurrence at the end of three years, and a second one a year later. Each small recurrence was easily destroyed by a single application of the Oudin spark.

Beer (27) in 1911 had collected 38 cases up to that date, all of which had progressed favorably under treatment with the high-frequency current.

The spark was applied by Buerger (28) to destroy cysts and hypertrophic conditions of the mucous membrane of the vesical neck and posterior urethra as well as small papillomata and fold formations in the urethra.

The heat effects of the high-frequency current range from hyperæmia to burning (Clark, 29). Between them there is a desiccation point. This effect is produced by a high-frequency current concentrated to a fine metal point. The induction coil high-frequency current does not render possible an absolutely constant thermic degree, so he uses a static machine of large output. He treated small warts and moles successfully, then applied the current to epitheliomata, exuberant granulations, skin pigmentations, acne pustules, X-ray keratoses, lupus and bladder papilloma through the catheterizing cystoscope. He concludes that—(1) it is a valuable adjunct to surgery. (2) It helps prevent recurrences in cancer. (3) It sterilizes tumors. (4) It is useful in recurring cancer of the breast. (5) It is better than cautery as a curette in cancer of the cervix; is styptic, deodorant, and penetrating.

Further observations by Keyes (30) in 1911 on the cauterization of bladder tumors led him to make the following suggestions: (1) The smallest spark gap possible should be used, as a large gap causes unnecessary pain and hæmorrhage, and also burns the insulation off the wire quickly. (2) The duration of a single treatment should vary according to the patience of the patient, the danger of burning the bladder when only a

small bit of tumor remains and according to the destruction of the insulation. If kept on too long he obtained a short circuit through the cystoscope. (3) Burning off of insulation may on withdrawal of the wire peel off a piece of rubber which drops into the bladder and becomes a nucleus for a stone. To avoid this he withdrew the wire and telescope together. There was no danger of this if the bladder emptied itself. (4) Intervals of one week were ideal for applications to growths. The slough separates in from two to four weeks. (5) Among accidents likely to happen, he mentions detachment of insulation, and in one case there was a severe hæmorrhage and a swelling up of the bladder mucous membrane, simulating infiltrating carcinoma.

He found the Oudin monopolar superior to the d'Arsonval bipolar current. He found the results disappointing in cancer, prostatic hypertrophy, bladder ulceration, and enlarged verumontanum. In bladder papilloma 8 cases were cured and 2 were still under treatment.

Thomas (31) in 1912, reported 4 cases of bladder tumors treated by the high-frequency current by the method of desiccation. He condemns the removal of a piece of the tumor for diagnosis as it invites metastases and one cannot usually get enough for a sure diagnosis. He distinguishes between desiccation and fulguration, the former being a continuous effluve of current of low amperage from extremely high voltage, producing dehydration of tissue, resulting in blanching, devitalization, and drying. Desiccation is a penetrating, blackening, charring cauterization of tissues.

Of the 4 cases reported, one had remained cured for one year, the pathological report of which was probable carcinoma. A second case had just been discharged, the result not known; a third case had been under treatment for five months, and a fourth case had been under treatment for two months, both of which had just been discharged.

The technique employed by Thomas was as follows: The spark gap was 1 to 3 mm. The best gauge is the effect on the tumor; no spark should be visible. A small bubble of hydrogen gas shows when the point of the electrode meets tissue; this is followed by a blanching of tissue, due to dehydration or oxidation resulting in complete devitalization. The dead tissue sloughs in a few days.

The current should not be used oftener than twice a week, usually once a week, and frequently every two to three weeks, according to cell reaction produced.

Clark (32) recommended that desiccation be used in superficial destruction; that it be applied with a single electrode in contact with the tissue and sparks of great length through air gap on to tissue, the other pole being grounded. For deep destruction he used the bipolar method, the metal point in contact with tissue, the other pole somewhere else on the body. This current devitalizes by drying the tissues; the spark is not hot enough to cauterize, but causes rapid dehydration of tissues, rupturing the cell capsule; it penetrates to one inch or more, according to the frequency, distance, time of exposure, and density of the tumor. It does not open vessels or lymph-channels; it sterilizes tissues. A dry crust separates in three days to a week. He employed this method in warts, moles, angiomas, various ulcers, acne, growths of the bladder through a catheterizing cystoscope, rectal papillomata, ulcerations, larynx tumors, and certain forms of eczema and parasitic skin diseases. Fulguration is a method (Clark) that should be used in combination with operative measures; even in advanced cases of bladder tumors treated by operation and fulguration, patients have been free from recurrences for from one to five years.

De Keating-Hart maintained that radiosensitivity of tissue was in direct proportion to its temperature, the warmer the part, the more intense the action of the X-rays. For deep tissue beneath the skin surface, he used thermopenetration or diathermy. To control dermatitis he used a leather or aluminum filter with cracked ice between two layers of gauze over the skin, or the surface was moistened and fanned.

Beer (33) in 1912 reviewed 183 cases treated for papillomata of the urinary bladder collected to that time, nearly all giving favorable reports.

In regard to the technique, Beer thought that copper wire was better than steel, as it produced more extensive necrosis, and that experience might show that other metal electrodes would be better than copper, also that other mediums would be preferred to water and that the bipolar current might replace the monopolar, but doubted this as the d'Arsonval current had less cauterizing and less electrolytic action. He found that Nature seemed unable to divest herself of necrotic villi where a cystitis was present with a papilloma, and that the cystitis must be cured first. He treated no malignant growths except small superficial ones. He treated all other cases except where the tumor was inaccessible or the patient intolerant. In some cases where the whole bladder was studded, evidently only complete cystectomy would give relief.

Furniss (34) thinking he was dealing with a broad base papilloma fulgurated it. Tissue came away and a ureteral calculus came through. He considered fulguration as the bloodless method of relieving impacted stone. Opposing Beer's statement that only benign growths were suitable for the high-frequency current, Rytina (35) reported the case of a carcinoma of the bladder kept under control and practically cured.

Judd (36) in 1912 reporting the results of treatment of tumors of the urinary bladder at the Mayo clinic, cited 17 cases treated by Oudin current out of 114 reported. Eleven of these were cases of recurrence after operation. One case had gone fifteen months with no recurrence; 5 cases one year with no recurrence. No original non-papillomatous growths were thus treated, but recurrences were treated with considerable success. They found that villous growths on small pedicles were the most favorable for the high-frequency current.

In contradistinction to his early experiences in which he stated that the high-frequency current had no effect on carcinoma, Keyes (37) reported a case of recurrence after the removal of a growth, reported carcinoma which was treated and controlled by four applications of d'Arsonval current and four of Oudin during a period of eighteen months. The patient died of intercurrent disease.

Another case, supposedly carcinomatous by its appearance, disappeared entirely after treatment by the Oudin current and there was no appearance of growth for six weeks at the time the article was written.

Reviewing his experiences with the high-frequency current, Beer (38) in 1913 cited his former articles. He stated that he found it better to have no air-gap between the electrode and lesion, that he got a whiteness at the spot of application, then carbonization; hydrogen was freely generated; metallic copper was present in the tissues. Beer used copper electrode, Wappler machine, street current, but this must be alternating or if direct must be transformed. Instead of an induction coil and interruption, the latest model used closed magnetic field transformers (step-up) giving more rapid oscillations and capable of being employed in any room.

In making an application he pushed the electrode in among villi for fifteen to thirty seconds at each place. The nearer the electrode approached the base of the growth the shorter the application was made lest the bladder wall be injured. If the bladder was touched it caused pain. Repeated applications were made to

different spots until the whole growth was destroyed. The slough was voided in small pieces. This extended over several months in larger growths, but usually a few days to one week. The rheostat was used with half resistance on, sometimes all resistance on, the spark-gap one-eighth to one-fourth inch, usually a short gap.

He used an electrode of No. 6 Charrier insulated copper (at times steel) wire. As the rubber melted it was repeatedly trimmed. A total time of from three to five minutes' application was made at one sitting. In one case applications totalling ten minutes, thirty seconds, at twenty places were made, but this was a very large tumor. These were repeated in a few days. Treatments were discontinued as soon as the whole growth appeared necrotic. Sloughs were allowed to separate spontaneously or helped by bladder irrigations. After the base was thus exposed, after two or three weeks it was treated like the original outgrowth.

Beer cited the danger of perforating the bladder wall, but says this should not happen if one is careful. The reports collected by Beer of 33 surgeons were mostly favorable. There were 187 cases of intravesical papillomata and 20 cases of urethral papillomata treated in America and 28 cases in Europe. Definite cures for two years were controlled by repeated cystoscopy.

He stated that the high-frequency current had been used for fifteen years for the treating of superficial growths, and that its only novel feature was its use under water in the bladder through the cystoscope. In selecting cases he gives as the contra-indications: papillary carcinoma, patient's intolerance of the cystoscope, and growths inaccessible to direct and indirect cystoscopy, as well as those at the neck of the bladder which are traumatized by introducing the cystoscope, bleed and prevent accurate work.

Watson (39) in 1913, gave the following conclusions: (1) The treatment of benign tumors by high-frequency current is probably as effective and likely to be more effective than suprapubic excision. Many cases treated by operative methods both in papilloma and carcinoma recur after three years. The high-frequency current has only been in use a short time, so thus far one is only justified in feeling a strong hope that it is the best treatment. He considers the high-frequency current the best method in cases of papilloma. (2) This treatment should be abandoned as soon as it is evident that a recurrent tumor is malignant, and a transperitoneal resection or total cystectomy should be done. (3) It may be shown later that suprapubic ex-

cision is better for papillomata than high-frequency treatment.

Buerger (40) used the high-frequency current (Oudin) in the treatment of an ulcer of the bladder which was early cured, and in a second case in conjunction with mercury injections he obtained a like result.

A further report by Buerger (41) gave a recurrence in one case and he stated that he had tried the fulguration in two cases of callous ulcer without improvement and in a second callous ulcer, he excised the ulcer.

As a means of facilitating the passage of descending ureteral calculi, Buerger (42) devised an olive-tipped electrode, the olivary tips being graded in size and screwed on. The dilatation was begun at No. 6 F., a current of 300 to 400 milliamperes being used for a few seconds, the second pole of the d'Arsonval current being placed at the back. Three stones respectively the size of a French pea, 8 mm., and 8 x 4 mm. were passed after this treatment.

Pilcher (43) found that with recurrent growths where new-growths appear in their original form or spring from a new base after extensive removal of the tumor, the d'Arsonval current is better than the Oudin. A case was cured after operation and after Oudin treatment had failed. One case of papilloma was cured. It puts carcinoma growths under control in inoperable cases.

Heitz-Boyer (44) gives as the treatment of large bladder tumors, a hypogastric incision, bladder tumor excision, and pedicle treated later by high-frequency current through the cystoscope.

Having employed the high-frequency spark for the treatment of vesical papillomata soon after Beer in 1910, and with the same good results, the writer (45) in 1911 began to employ it in cases of vesical obstruction where operation was contra-indicated. It was found that prostatic obstruction, malignant, adenomatous, and fibrous, could be destroyed sufficiently to give partial or complete relief from the obstruction, such relief being permanent in some cases up to the time of reporting the cases in 1913. The technique employed was as follows: A No. 18 F. indirect close vision cystoscope was used. The current (Oudin) was applied with a No. 5 F. insulated steel wire passed through the cystoscope and held tightly against the portion of the prostate to be destroyed by means of the deflector. A one-fourth inch spark was used, the wire being held in contact with the prostate until the hydrogen bubbles ceased to form. A cut was burned through the obstructing tissue. At the

same sitting or at subsequent ones, the cut was widened and deepened until the vesical orifice was freed posteriorly. Of 13 cases reported, 4 were carcinoma and 9 benign obstructions. The cases of carcinoma were advanced and inoperable. These patients lived one year or more, during which time they were able to void or pass a soft rubber catheter with ease when previously this had been impossible; they all died of metastasis or other intercurrent disease. The benign cases were median bar or small median lobe enlargements and two were cases of general adenoma. Those presenting obstruction from small amounts of prostatic tissue obtained complete relief of symptoms after from three to six applications. In cases of general prostatic enlargement the amount of residual was decreased. Reaction following the applications was slight; there was no bleeding. The operations performed under the eye, without shock, bleeding, or leaving a raw surface, seemed superior to other methods in cases where it was necessary to destroy only a small amount of tissue.

Barney (46) reported a case illustrating the efficacy of the high-frequency current in treatment of tumors of the bladder, and called attention to a reaction in the mucous membranes around the base which he thought to be cancer. He excised this area, the pathological report showing only chronic inflammation.

Stevens (47) reported 2 cases of prostatic obstruction relieved by applications of the high-frequency current. The first, a probable constriction of the neck of the bladder, was relieved by four cauterizations of three minutes each in a three-month period, the residual being reduced from 26 to 34 oz. to 9 to 13 oz. One more treatment reduced the residual to 1 to 1.5 oz., capacity 22 oz.

The second was a case of pedunculated median lobe. Six treatments destroyed this lobe. The residual was reduced from 14 to 1.5 oz. He thought that the d'Arsonval current could accomplish results quicker, but care should be used to avoid too deep destruction of tissue.

Ashcraft (48) in reporting a series of cases of benign and malignant tumors of the bladder treated with the d'Arsonval current through the operating cystoscope stated that he had found this current better than the Oudin. In experimenting he found that an application of 90 seconds of a 425 milliampere current with the rheostat at the third button burned a 1 cm. area 1 cm. deep in beefsteak. He found that it required a much stronger current under water than in air to penetrate tissues, and that it required

a 425 milliampere current at least to destroy vesical tumors. He found that the Oudin current burned a very small area and only acted superficially, so he used the d'Arsonval. He considered the Oudin fit only for very small growths. He especially advises the d'Arsonval in large growths and where malignancy is suspected. His technique is as follows: The wire penetrates the tissues 1 to 2 mm.

First application: 15 seconds, 250 ma., then rest 15 seconds.

Second application: 15 seconds, 300 ma., then rest 15 seconds.

Third application: 15 to 40 seconds, 425 to 575 ma., with new wire.

As a rule there was a little reaction consisting of slight temperature, pain, frequency, burning, and distress. In carcinoma there may be more reaction. The amount of reaction is the guide to repetition of treatment. He gives one week to ten days as the interval.

Four cases have remained cured eighteen months, sixteen months, four months, and three months, respectively; one case improved, died of uræmia one year after; and one case was still under treatment.

In an exhaustive article appearing in November 1913, Young (49) reported 117 cases of vesical tumors of which 21, 17 per cent, were benign and 96, 83 per cent, were malignant. These cases were treated as follows: (1) suprapubic excision, 43, (2) fulguration, 19, (3) suprapubic drainage, 22, (4) suprapubic partial excision and destruction of base by cauterization or high-frequency current, 5, (5) no treatment, 28.

He stated that benign tumors were relatively infrequent, and unless cured, almost always became malignant.

1. (a) Suprapubic excisions 47 cases

35 malignant by microscope	} 80 per cent
2 malignant clinically	

 12 benign (8 microscopically, 4 clinically), 4 recurred as malignant, 1 showed beginning malignancy, and 15 per cent continued benign.
- (b) Excision with pedicle and portion of mucosa . . . 23 cases

9 benign
4 became malignant
1 died of embolism
2 cured four years
1 result unknown
1 extensive benign recurrence.

 14 malignant

2 cures; 1 six years, 1 two years.
12 recurred, with death in short time.

Young says, "These results are extremely bad; not nearly so good as obtained by fulguration, and show in a striking way the inadequacy of the suprapubic excision, even when great care is

taken to avoid implantation and to thoroughly remove the tumor after clamping the pedicle."

- (c) Excision of tumor with more extensive removal of adjacent vesical mucosa 4 cases

1 case well after 2½ years,
2 cases had prompt recurrence,
1 died of carcinoma of liver and stomach 2½ years after operation.
- (d) More or less extensive resection of entire thickness of bladder wall adjacent to tumor 20 cases

3 benign
2 cured, one year
1 result unknown
17 carcinoma, 7 hopeless at operation
5 cured, one to ten years
1 operation, recurrence at one year
1 operation, recurrence at two and a half years
1 six years post-operative, nine years post-operative, inoperable, infiltration behind bladder.
1 cure, 5 years
1 cure, 1 year
1 cure, 1 year, died of uræmia
1 cure, 1 year, died of recurrence 20 months
1 cure, 2½ years, recurrence 5½ years.

These results Young considers very gratifying.

2. Fulguration (d'Arsonval or Oudin)

12 benign cases treated through cystoscope
1 cure 6 months
1 cure 4 months
1 cure 6 months
1 cure 9 months
1 cure 15 months
1 cure 6 months
1 cure 18 months
1 cure 1 year
1 cure 5 months
1 cure 1 year
1 cure 4 months
1 case still under treatment.

Young believes these results show the great superiority of this method over suprapubic excision in benign cases, "especially as some of the cases were so extensive that the whole bladder practically would have to be excised."

The high-frequency current gave unsatisfactory results in almost all cases which proved malignant.

One case in which the high-frequency current was unsatisfactory is now cured one year after suprapubic resection of part of the bladder.

In four cases with partial destruction of the tumor by the high-frequency current there was an improvement in the frequency and difficulty of urination, but all died of metastasis.

In one case of carcinoma there was a wonderful disappearance of the growth.

In three cases splendid results were obtained by a combination of suprapubic partial excision, cauterization with Paquelin cautery and high-frequency current.

"It is possible," Young says, "to destroy malignant vesical tumors if the spark is strong

enough and the bladder filled with air; so recently I have applied fulguration through an open-air endoscopic cystoscope. It is evident that extremely thorough cauterization, by Paquelin or electricity, can successfully destroy vesical carcinoma if care is taken about preventing implantation and to thoroughly destroy the base of the growth."

Summary of carcinoma cases:

- 12 treated by cauterization through suprapubic wound.
- 3 are well.
- 1 small recurrence.
- 1 bladder free, retrovesical metastasis.
- 5 died.
- 2 rapidly losing ground.

Young's conclusions are as follows:

1. Visual excision is utterly inadequate and is followed in both benign and malignant cases by prompt recurrence.
2. Cautery is an extremely valuable agent with suprapubic or intraperitoneal operations. There are some brilliant cures, even in apparently hopeless cases.
3. Carcinoma, except extensive cases, is best treated by suprapubic resection.
4. For benign tumors, the high-frequency current seems thoroughly satisfactory but should be vigorously applied.

In tabulating further observations on the use of the high-frequency spark for the relief of prostatic obstruction in selected cases, the writer (50) added 8 cases to the 14 previously reported, making a total of 22 cases treated to August, 1913. Of the 22 cases, 8 were malignant, the disease being advanced, inoperable, and the obstruction complete. The obstruction in each of these cases was relieved so that the patients were able to void or partially empty the bladder and at times pass a soft catheter.

The benign cases, 14 in number, were as follows:

1. Small fibrous prostate constricting the vesical orifice, one case. The patient had been operated upon by perineal incision and stretching of the vesical neck with very little relief and partial incontinence since the operation. The patient was greatly relieved by a partial destruction of the prostatic collar with the high-frequency spark, ease of voiding, loss of frequency, and better control.
2. Median prostatic enlargement of prostatic isthmus, 2 cases, the symptoms were relieved and both patients emptied the bladder.
3. Small median lobes without general prostatic enlargement, 3 cases. Relief of symptoms, no residual.

4. Moderate general adenoma, one a case of diabetes where prostatectomy was not to be considered, and a second where operation was refused. Symptoms disappeared. Residual eliminated.

5. Prostatic nodules left after incomplete prostatectomy, 4 cases. In all of these patients cystitis and atony were present. Three were improved, the residual diminished, and in the fourth the residual eliminated.

The experience of the writer led to the conclusions: that when a vesical obstruction was caused by a small amount of tissue, this could be destroyed and the obstruction relieved by application of the high-frequency spark, and that this was the method of choice in these cases. In no case was it undertaken when a general adenoma was present unless the patient's condition eliminated the possibility of prostatectomy or the patient refused an open operation. In the cases presented, (1) the cases of small fibrous prostate, median lobe and small lobe obstructions, without general enlargements were symptomatically cured; (2) the other cases of obstruction, i.e., general adenoma and cases of incomplete prostatectomy with atony, were improved.

In the Year Book of the Pilcher Hospital, P. M. Pilcher (51) makes the following statements: "We believe that one can obtain better and more permanent results in treating bladder tumors by avoiding the use of the knife whenever possible. If the treatment is ineffectual through the cystoscope, a suprapubic cystotomy is performed, but no attempt is made to remove the tumor by resecting the bladder. Our present method of treatment consists in destroying the tumor more by actual cautery and deep penetration of the base with the bipolar spark." He considered the Oudin current best for ordinary papilloma and the d'Arsonval current best for recurrent growths.

Without mentioning the type of prostatic enlargement or obstruction, Beer (52) stated that the transurethral cauterization with Bottini incision as well as with the high-frequency current seemed to have only temporary effect.

Pedersen (53) reported a case of extensive adenocarcinoma of the bladder and intestines in which he used the high-frequency current without success. Also two cases of papilloma, one cured in four months and a second in two months.

Newman (54) says, "Operations employed for removal of neoplasms in the bladder are:

- "1. Excision of tumor through suprapubic opening with knife or cautery.
- "2. Partial resection of bladder wall.
- "3. Total excision of bladder."

It is not necessary to refer to the method of removing growths per urethra with the aid of the cystoscope employed by Nitze and others, as the suprapubic route having many advantages is now always adopted. He reports two cases of simple papilloma operated by the suprapubic route, and one case of adenopapilloma treated by suprapubic excision.

Stevens (55) cited the two cases previously reported of prostatic obstruction relieved by high-frequency current and gave a third case of median bar where the residual was reduced from 3 to 6 oz. to 1.5 oz. Two other cases did not tolerate instrumentation, so the treatment was discontinued.

The residual was cut down from 5 oz. to 6 dr. in a case of transverse cicatrix after a suprapubic prostatectomy, by four applications of the high-frequency current by Bangs (56).

Uhle (57) considered the d'Arsonval current more penetrating than the Oudin. In two cases he noticed a recurrence after six months in treating a vesical papilloma with the high-frequency current. The recurrences were treated and they were free at the time of writing, one and a half months.

One case had been cured one year, another six months, two cases two weeks, one case was under treatment, one diagnosis doubtful; in one case of cancer the bleeding was controlled under treatment, and in three other cases of cancer the bleeding was controlled but the patients died later.

Clark (58) described desiccation as between hyperæmia and carbonization, a rapid dehydration of tissues, rupturing the cell capsule and transforming it into a dry mass. He stated that recent experience justified the hope that in selected cases desiccation may be of service in prostatic hypertrophy treated by the urethral route. He also used the same method for urethral papilloma, caruncle, granulations, etc. The sterilization is somewhat deeper than the area destroyed on account of heat penetration. The advantages over cautery and chemical escharotics are: (1) absence of much inflammatory reaction; (2) no contracted cicatrix, therefore less likelihood of stricture.

In the destruction of local tuberculous bladder ulcerations secondary to kidney tuberculosis which do not clear up after nephrectomy, Heitz-Boyer (59) employed the high-frequency current. He stated that it was necessary to destroy surrounding tissues for at least 1 cm. outside the lesion.

Bremerman (60) reported 31 cases of benign

papillomata treated by the high-frequency current with one recurrence and this cleared up with the same treatment. He began at once to treat the base of the tumor and treated the whole base at one sitting.

Moloney (61) applied the high-frequency current to a calculus in a diverticulum of the bladder. After 56 treatments the calculus finally got into the bladder. He does not know whether the passage of the stone was due to the action of the current or to the dilatation of the orifice of the diverticulum.

It is now five years since the high-frequency current was first employed to destroy vesical papillomata, and following that for the destruction of other tissues in the urinary tract. It has been definitely proved that this current will destroy tissue superficially by actual cell disintegration when applied as a monopolar (Oudin) current, and more deeply when applied as a bipolar (d'Arsonval) current. The question is when and how to apply it.

In the treatment of papilloma of the bladder and urethra, the reports of 33 surgeons collected by Beer in 1914, showed that it was the method of choice in these cases. Reports since then substantiate this fact. Young's comparison with the treatment by excision is convincing. The writer has to date used the high-frequency current in 56 cases of vesical papilloma which were clinically benign. There have been recurrences in 6 cases. These recurrences were easily destroyed by further applications of the current. In one case of extensive involvement of the bladder wall (almost complete) the bladder was opened, the entire surface cauterized with the Paquelin cautery, and recurrences, which appeared almost at once, were treated with the high-frequency current. This patient died of anæmia from hæmorrhage. Following applications of the high-frequency spark to the pedicle of a papilloma in another case, the bladder filled with blood-clots necessitating a suprapubic cystotomy, removal of clots, excision of growth, and cauterization of the base. There has been no recurrence in two years in this case. Application of the spark usually causes a cessation of bleeding.

The d'Arsonval current should first be applied to a papilloma, one pole buried in the villi, the other over the buttock. A current of 200 milliamperes is usually sufficient and should be given at repeated intervals, each application being sufficient to char the entire surface of the growth. When two-thirds of the growth has been destroyed, the Oudin current should be substituted and the destruction pro-

ceeded with more cautiously until the entire growth has disappeared. In working close to the bladder wall, an œdema of the mucous membrane takes place which resembles infiltrating carcinoma. This disappears within a few weeks.

Any catheterizing cystoscope can be used for this purpose, and there should be no trouble with short circuiting. Aside from the two cases above mentioned, the remaining 54 of the writer's cases have progressed favorably, the entire growth being destroyed.

It is advisable in all cases of papilloma to make a cystoscopic examination once a year. Thus small recurrences may be discovered early and treated at once.

How shall we differentiate a benign from a malignant papilloma? This is often very difficult from the clinical and microscopical standpoint. Malignant papillomata are more often multiple, appear on the lateral and anterior bladder walls, have broader pedicles, appear more stocky, bleed easily, and cause more marked symptoms of vesical irritability and pain. The removal of a section for diagnosis is not always satisfactory. These tumors are often both malignant and benign and the section removed may not reveal the carcinoma.

Malignant papillomata do not react favorably to the high-frequency current. In 2 cases of the writer's in which it was employed, one showed signs of toxæmia and metastases developed rapidly, the vesical symptoms were aggravated. In a second case, after two applications of the d'Arsonval current, the growth was covered with a slough, but the vesical symptoms were severe—frequency, burning urination, and pain in the bladder—and a wide resection of the bladder was made. In this case a wide infiltration of the bladder had taken place and the question arises as to whether the application of the current had not hastened its spread. A third case treated by excision and cauterization has been free from recurrence for one year.

In diffuse carcinoma of the bladder wall, with painful, frequent urination, hæmaturia, and difficult urination, much can be done to relieve the symptoms by occasional applications of the d'Arsonval current. A current of 200 milliamperes is sufficient. The writer has applied this current using an olive, metal-tipped electrode in the bladder, the second electrode over the buttocks for a total of three minutes, at periods of a week apart until the bleeding is controlled, then a month or more apart, according to the symptoms. Other cases so treated by the writer lived for periods of from six months to two years,

dying of metastases, during which time bleeding was absent, pain slight, and frequency lessened. All were able to void. The writer has 3 similar cases under his care at the present time; one for twelve months, one for eight months, and one for six months. They are all voiding without pain, have no hæmaturia, and are more comfortable than if they had submitted to an operation which would have amounted to a nearly total cystectomy.

The application of the d'Arsonval current by means of graduated olive-tipped bougies as suggested by Buerger, for dilatation of the ureter in assisting the passage of ureteral calculi, or the Oudin spark for the release of calculi lodged at the ureteral mouth, as applied by Furniss, is worthy of trial.

In a series of 46 cases of impacted ureteral calculi seen by the writer in the past twenty-eight months, in 6 the calculus was too large to pass, although located within the lower 5 cm. of the ureter, and was removed by open operation. No attempt was made in these cases to dilate the ureter. In another case repeated attempts have been made over a period of nine months to dilate the lower ureter; the calculus has moved to a point 1 cm. from the bladder, but has not moved from this position in four months. Two more cases were dilated, but have not returned for further observation and the result is not known. In 39 cases the calculi were passed. Of these 39 cases, 6 were treated by the passage and manipulation of filiforms, ureteral catheters, and the injection of oil into the ureter; in the remaining 33, either the Oudin current was applied to the ureteral mouth with the wire electrode, or the ureter was dilated with olivary bougies with which the d'Arsonval current was applied. The d'Arsonval current probably aids in the dilatation and the Oudin stretched mucous membrane, thus enlarging the orifice.

In one case a cicatrization took place at the ureteral orifice, following repeated applications of the d'Arsonval current of 250 milliamperes. The cicatrix was stretched by a further dilatation of the ureter with the olivary tips.

The longer ureteral calculi remain impacted in the lower ureter, the smaller are the chances of releasing them. In assisting in their passage it is usually a question of changing the axis of the calculus, relying on the pressure from behind to force it on. This can be accomplished with a filiform or ureteral catheter. A dilatation of the ureter from below may be more easily accomplished with the olive tips. A calculus impacted at the ureteral orifice may be freed

by destroying the mucous membrane around it with the high-frequency spark. The resultant damage is slight.

The application of the high-frequency spark for the relief of obstructions of the vesical neck in selected cases has, in the hands of the writer, proved a valuable adjunct. The cases must be carefully selected. As a method of choice it is best applied in those cases where the obstruction is caused by a small amount of tissue, as in hypertrophy of the mucous membrane, in chronic inflammation of the trigone and vesical neck in both the female and male, in median bar obstructions, cicatrices, small median lobe prostatic obstructions, and in small fibrous prostates. In these cases, the Oudin spark is used, the applications being made at intervals of a week or more, preferably at intervals of several weeks, until the obstruction is relieved.

In cases of general adenoma of the prostate, where operation is contra-indicated by the condition of the patient, much relief can be obtained by burning through the prostatic obstruction and repeating the applications at intervals of six months or a year.

In carcinoma of the prostate, inoperable, with retention, much can be done to relieve the patient by destroying the surface of the growth, thus enlarging the vesical orifice. Frequency, tenesmus, pain, and bleeding are lessened and all but the frequency may disappear.

In 1913 the writer reported 22 cases of vesical obstruction treated by this means. Since then he has had 35 cases, making a total of 57 cases. They represent the following types:

Carcinoma of prostate and bladder wall.	12
Small median lobe obstruction without lateral lobe enlargement.	7
Median bar obstruction.	9
Small fibrous prostate.	9
General adenoma of the prostate.	4
Cicatrix at the vesical neck.	2
Chronic inflammation of the vesical neck with hypertrophy of mucous membrane.	4
Prostatic nodules remaining after incomplete prostatectomy.	4
Tabes.	3
Lateral lobe enlargement.	3
	57

The cases of carcinoma were all inoperable. Some relief from symptoms was obtained in every instance. Three are still under observation, the others have died of metastases or intercurrent disease. One case of complete retention from a hard diffuse carcinoma of the prostate and bladder wall, treated for the last time eight months ago, has been able to return to work, and has gained

weight; the residual has been reduced to 3 oz. and there are no urinary symptoms other than urinating every three hours.

In 5 of the small median lobe obstructions, the symptoms have been markedly relieved — one is improved and the other case reports that he is about the same as before treatment.

In all the median bar obstructions as well as those due to cicatrix and chronic inflammation of the vesical neck, the residual has been eliminated.

The cases of small fibrous prostates have improved, two are still under treatment.

In the 2 cases of tabes, the residual was reduced in one case from 8 oz. to 2 oz., and in the other from 2 to 3 oz. to 1 to 2 drams.

In the cases of incomplete prostatectomies with nodules of prostate remaining about the vesical neck, partial relief was obtained in each instance, although all had atonic bladders with chronic cystitis.

The cases of general adenoma were all suitable for prostatectomies as far as the prostate was concerned. Five patients refused operation and in 4 the general condition of the patients prohibited it. Three of these patients have died of intercurrent disease. Two are symptomatically relieved. Three are still under treatment and improved. In 8 the residual was reduced, the frequency lessened. In one case there was no improvement. This was in an exceedingly large prostate where manipulation even with a specially made cystoscope was exceedingly difficult. In this one case only, the d'Arsonval current was used. The patient has complained of pains in the joints since the treatment and it is probable that these symptoms are due to absorption from prostatic tissue destroyed and not cast off.

The cases of lateral lobe enlargement have shown little improvement, probably due to the inability to destroy enough prostatic tissue.

There are many factors entering into this method of treatment which should be observed.

1. The selection of cases.
 - a. Vesical obstructions caused by a small amount of tissue are most suitable.
 - b. Where one seeks a partial relief of symptoms in an inoperable case or where operation is refused.
 2. Technique.
 - a. Gentle manipulation.
 - b. The use of a small, close vision cystoscope with a deflector.
 - c. The destruction of a small amount of tissue at each treatment.
 - d. Treatments at wide intervals, only repeated when all symptoms from the former treatment have disappeared.

e. Treatment of cystitis if present.

The advantages of this treatment are:

1. An anæsthetic is unnecessary.
2. The operation is performed by sight.
3. There is little or no pain.
4. There is but slight reaction.
5. There is no hæmorrhage, and bleeding is stopped if present before applying.
6. No ulcerated surface or cicatrix is left after the dead tissue has come away.
7. The patient is not incapacitated.
8. The progress can be watched by the cystoscope.

The disadvantages are:

1. The length of time required to treat a case—often several months.
2. The necessity of destroying only a small amount of tissue at one time.
3. Increasing (temporarily) of vesical irritability where cystitis is present.
4. Difficulty of manipulation in some cases.
5. Amount of after-care necessary in many cases.

Papilloma of the urethra is rare, but when present can be easily destroyed by a mild Oudin spark applied through the close vision cystoscope or urethroscope. The writer has applied the spark with success in two cases.

In certain cases of hypertrophy of the verumontanum the high-frequency current may be applied with beneficial results. In one case of the writer's, one application of the d'Arsonval current (150 milliamperes) was followed by occlusion of the right ejaculatory duct and an acute seminal vesiculitis. The occlusion was relieved and symptoms disappeared in five days. In two other cases, the Oudin spark was applied through the close vision cystoscope with success.

For the destruction of herpetic ulcers, venereal warts, and the treatment of chancroids the high-frequency spark has long been used. A short Oudin spark suffices to accomplish the results and probably does this better than any other method of treatment.

SUMMARY

1. The high-frequency current is an alternating current of from one to two million oscillations per second. When used as a monopolar Oudin current it causes superficial destruction of tissue, or when used as a bipolar d'Arsonval current it causes deeper destruction.
2. Used in the urinary tract it is the method of choice in dealing with benign papillomata of the bladder.
3. Malignant papillomata and circumscribed carcinoma of the bladder wall are best treated by

wide resection of the bladder wall and destruction of recurrences by the d'Arsonval current.

4. In cases of extensive carcinoma of the bladder wall, the growth may be retarded and symptoms lessened by the d'Arsonval current.

5. Certain types of vesical obstruction—due to a small amount of tissue—may be cured by the destruction of this tissue with the Oudin spark.

6. Inoperable cases of vesical obstruction can be partially relieved by destruction of tissue about the vesical neck.

7. Failure will follow attempts to relieve such obstructions unless care is exercised in manipulations, and the treatments are given at wide intervals, a small amount of tissue being destroyed at each treatment.

8. The d'Arsonval current probably assists in dilating the ureter with the olivary bougie, and the Oudin spark may be an aid in releasing a calculus lodged in the lower ureter or at the ureteral orifice.

9. The Oudin spark may be of assistance in reducing a hypertrophy of the verumontanum or in destroying a urethral papilloma.

10. The Oudin spark is probably the best known agent for curing venereal warts, herpetic ulcers, and chancroids.

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ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY

SURGICAL TECHNIQUE

ANÆSTHETICS

Widdowson, F. R.: *Anæsthesia with a Description of the Röth Dräger Apparatus.* *Report Jefferson M. Coll. & Hosp.*, 1915, vi, 86.

Ether and chloroform properly related and administered with oxygen still hold first place in producing narcosis for major operations. A knowledge of the proper use and relation of the different anæsthetic agents and their adaptation to the physical conditions found in each case requires a training as comprehensive as that of a physician.

The administration of this form of anæsthetic is easily and completely accomplished by the proper adaptation and employment of the Röth Dräger apparatus. It is very difficult to convey to the reader a conception of the mechanism of this apparatus without a diagram, sufficient to say that it operates under the force and pressure of oxygen. This oxygen flows in a constant stream in such a way as to produce suction, thereby causing the anæsthetic to drop into the oxygen stream. The impact of the oxygen bursts the anæsthetic drop, causing instant and complete volatilization. This admixture of anæsthetic and oxygen traverses a distance of about five feet by way of the economizer bag, connecting-tube, and face mask to the respiratory passages of the patient.

The following observations were noted by the author during the employment of the apparatus:

1. Patients do not object to the face mask or complain of any smothering sensation during its use. It can be used with the head in almost any position and can be thoroughly sterilized by boiling.
2. The apparatus is simple to operate. The induction period is slightly prolonged and is almost free from struggling, spasm, cyanosis, or coughing, even in alcoholics.
3. The temperature of the anæsthetic as respired is about that of the surrounding atmosphere. The irritant effect of the anæsthetic vapor is rarely complained of, and as a result mucus is rarely encountered.
4. The narcosis is wholly satisfactory and sufficiently profound for any surgical procedure.
5. The so-called continuous drop method is perfectly employed, and the anæsthetist has complete control of the anæsthetic.
6. The anæsthesia is uniform.

7. The pulse remains full and strong and the lips assume a cherry red color.

The following is a comparative report of 200 cases of ether administration, 100 of which were administered by the Allis inhaler; the other 100 by the Röth Dräger.

	Allis	Röth Dräger
Average length of anæsthesia.....	51 minutes	44 minutes
Average time for surgical anæsthesia.....	14 minutes	14 minutes
Average time for operation.....	34 minutes	30 minutes
Average time for recovery.....	66 minutes	43 minutes
Average weight per patient.....	128 pounds	133 pounds
Mucus.....	59 cases	10 cases
Vomiting during administration.....	3 cases	2 cases
Post-operative nausea.....	80 cases	30 cases
Post-operative vomiting.....	60 cases	30 cases
Post-operative headache.....	11 cases	10 cases
Post-operative thirst.....	84 cases	80 cases
Average amount of ether.....	7.98 oz.	2.97 oz.
Average cost of oxygen per patient.....		\$0.62

The above estimated cost is based on the use of the low-pressure oxygen tank. By the use of the high-pressure oxygen tank the cost can be reduced to about 20 cents.

Fauntleroy, A. M.: *Shock, Anoci-Association, and Anæsthesia.* *Virg. M. Semi-Month.*, 1915, xx, 244.

The ideal anæsthetic has not been discovered, but the first consideration in selecting an anæsthetic is the factor of expert knowledge of administration. Whereas ether is justly regarded as safer than chloroform, and nitrous oxide safer than either, nevertheless, in expert hands, either one of these anæsthetics, unless especially contra-indicated, can be used with practically equal safety. The other factors influencing the choice of an anæsthetic are those which have a direct bearing on the functions of circulation and respiration and the condition of the organs involved in the vital processes.

Many of the objections to an anæsthetic can be overcome by better knowledge of the particular anæsthetic; and correct administration largely decreases the deleterious effect on the patient. When ether is administered skillfully the patient passes quietly into the stage of surgical anæsthesia, but if clumsily given the four stages are quite well marked.

In overdosing with ether the respiration fails before the circulation, and restorative measures, if not too long delayed, are almost invariably successful. In general, ether is indicated whenever deep anæsthesia is required, as for amputations, dislocations, laparotomies, and in conditions of

shock and collapse. Respiratory disturbances are improved in most cases by ether. It is to be preferred in brain and neck work, and does no more harm to the kidneys than any other anæsthetic, unless they are badly damaged. Ether is contra-indicated in high blood-pressure, aneurism, and atheroma.

There are two practical methods of administering ether, the open and the closed, with modifications of each. By the first method the ether is given drop by drop, a wire mask covered by several layers of gauze being used. As soon as the patient is able to take a stronger vapor, a moist towel is wrapped snugly around the mask, leaving a small area in the center for the free passage of air. Ten minutes should suffice to produce a condition of surgical anæsthesia, characterized by regular automatic breathing, with the pupils slightly dilated but reacting to light.

The closed method of administration was the immediate precursor of the gas-ether sequence. The latter method consists in giving one or two bags full of nitrous oxide gas, and while the patient is unconscious, gradually turning on the ether. A complicated apparatus is required and except in a well-equipped hospital the method is not practical.

The intracheal insufflation method has been developed in connection with the prevention of collapse in intrathoracic operations. After the ordinary anæsthetization a tube is carried down to the tracheal bifurcation. The use of a laryngoscope and considerable skill are necessary.

Rectal etherization prevents interference with the operator in head and neck operations, but is slow and dangerous and has been supplanted by the intracheal method.

In intravenous etherization from one-half to one pint of normal salt solution containing seven and one-half per cent of ether is allowed to run into a vein, producing complete anæsthesia in from three to five minutes. It is claimed that the dose can be more accurately measured by this method than by any other, but it is too early to pass final judgement upon it.

E. K. ARMSTRONG.

Schepelmann, E.: By- and After-Effects of Kulenkampff's Plexus Anæsthesia (Neben- und Nachwirkungen der Kulenkampff'schen Plexusanæsthesie). *Deutsche Ztschr. f. Chir.*, 1915, cxxxiii, 558.

Within the past year and a half Schepelmann has administered Kulenkampff's plexus anæsthesia

300 times, and in this article reports the by- and after-effects that he has observed. The one most frequently observed, the so-called Horner's symptom-complex, is quite harmless. It consists of paralytic myosis, and sinking back of the eyes in the orbit, often associated with changes in the sweat secretion and dilatation of the blood-vessels, as well as signs of paralysis of a purely sympathetic nature. These symptoms are probably due to the needle coming in contact with the last cervical and first dorsal nerves of the plexus; they are generally unnoticed by the patient himself and disappear within one and one-half to three hours. The author discusses the anatomy and physiology of these symptoms and gives anatomical illustrations. They occur in 6 per cent of the cases.

He has never seen marked disturbance of the phrenic after plexus anæsthesia; a paralysis of two fingers, lasting for several weeks, he does not attribute to the after-effects of the novocaine injection, but to injury of the nerve by the use of an Esmarch bandage. In 7 cases he observed symptoms of slight injury to the pleura, pain in the thorax, difficulty in breathing, paleness, feeling of suffocation, etc. They appeared about a quarter of an hour after the injection, lasted about 10 minutes and were easily overcome with morphine. Two of these patients had somewhat severer symptoms. The most serious case of injury led to pneumothorax, which must have been caused by directing the needle too far toward the midline and puncturing the pleura and lung. The patient's condition was threatening at first. The pleural cavity was punctured with a trocar so arranged as to discharge the expiratory air, without allowing air to enter. The patient improved in three or four days and recovered completely in a week. In two patients there were symptoms of severe psychic disturbance, which disappeared, however, within a few minutes. The author thinks they were due to the injection fluid passing through the nerve-sheath, under the dura mater of the spine and so to the brain. Injection experiments on the cadaver with methylene-blue solution proved the possibility of such a course. The author concludes that the occasional appearance of by-effects does not detract from the excellence of the method. It is to be preferred to a general anæsthetic; it is unnecessary where local infiltration or Oberst's anæsthesia is sufficient. Bilateral plexus anæsthesia should never be given.

A. Goss.

SURGERY OF THE HEAD AND NECK

HEAD

Schepelmann, E.: Plastic Operation on the Cheek (Myeloplastik). *Deutsche Ztschr. f. Chir.*, 1915, cxxxiii, 270.

The author describes the case of a 35-year-old patient who had to have the greater part of the right

cheek removed for a carcinoma. He was also suffering from ankylosis of the right jaw, which was successfully treated by resection of the condyle of the inferior maxillary and the interposition of a flap of soft tissue. To cover the defect in the cheek, Schepelmann used a flap of skin 16 x 20 cm. in size, from the sternal, right parasternal, and mammary

region, the base of which was at the clavicle, the lower free edge being sewed to the skin covering the horizontal ramus of the maxilla. The wound where the skin was removed was covered with Thiersch transplants. The pedicle of the flap was separated gradually, beginning one and one half weeks after the operation, a part of it being separated every three days, until in the course of another week and a half, the whole was freed. Then the flap was turned upward to fill the defect in the cheek, with the skin side outward, so that the hairs from the chest wall replaced the hair of the beard. After some small corrective procedures, such as removing the nipple, injecting paraffin, widening the mouth, etc., the end-result was very good. Speech was normal, the jaw movable, the patient could eat

normally and his general condition was very good. He could continue his work. A. Goss.

McKenzie, D.: Acute Purulent Meningitis; Drainage of the Meninges; Recovery. *Proc. Roy. Soc. Med.*, 1915, viii, *Otol. Sect.*, 57.

A double vestibulotomy was performed and the modiolus broken through to reach the internal auditory meatus, into which a wire drain was inserted. A transverse incision was made extending from close to the internal auditory meatus to the lateral sinus in the dura of the posterior fossa, and from the internal end of this incision a free flow of cerebrospinal fluid welled up. The translabyrinthine flow of cerebrospinal fluid was slight; but from the dural incision the drainage was free. OTTO M. ROTT.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Jopson, J. H., and Speese, J.: Paget's Disease of the Nipple and Allied Conditions. *Ann. Surg.*, Phila., 1915, lxii, 212.

Paget's disease of the nipple was described by Velpeau many years before Paget's article appeared. The disease has a number of other names but no other has been universally adopted. To Paget belongs the credit for a clear, concise description of the condition, which has always received a great amount of attention from surgeons, pathologists, and dermatologists, in spite of the fact that it is a rare disease. About 150 cases have been published up to this time; 18 extra mammary cases were collected in 1910; the others were located on the breast.

Originally described as eczema or psoriasis, which was followed by the development of cancer, it was thought by early observers that in the study of these cases of Paget's disease the cause of cancer might be revealed. Darier and Wickham described what they believed to be psorosperms or coccidia in the deeper layers of the epiderm which they considered the cause of the malignant disease of the breast which follows. These were later shown to be actively dividing and deeply staining nuclei, and changes produced by fixing agents in the oedematous cells of this location. Extensive literature on the subject has appeared from the time of Paget to the present day, and a vigorous discussion has been waged between those observers who consider Paget's disease to be a primary affection, either unique and non-malignant or related to the epitheliomata, and the other school of observers who consider it to be a secondary skin lesion due to primary cancer, situated in the ducts of the mammary gland or to ordinary breast cancer. Jopson and Speese believe Paget's to be a primary and peculiar disease. The distinction between eczema and Paget's disease was made many years

ago. It has no relationship whatever to true eczema. It is important to distinguish between Paget's disease and certain rare types of diffuse cancer of the breast. Paget probably confused certain rare cases of diffuse scirrhous cancer with the real affection from which most of his patients suffered. The authors made this mistake in one case and in this, as in all cases of Paget's disease, the microscopic examination was necessary to confirm the diagnosis.

Jopson and Speese describe the clinical appearance of the affection, as well as the microscopic changes in the epiderm and in the corium, where infiltration of the round cells is a constant striking feature. They had the opportunity of studying five cases of true Paget's disease, and a number of others simulating it which were excluded as the result of their histological findings. The conditions which stimulate Paget's disease and are often mistaken for it include eczema, primary cancer with excoriation or ulceration of the nipple or of the skin, papillary cystadenoma, the rare form of diffuse cancer before mentioned, and one or more types of the rare primary tumors of the nipple. Ulcerated scirrhous furnishes the greatest number of mistaken diagnoses. The microscopic examination confirms or refutes the diagnosis in all cases.

They presented a review of the literature with special reference to the pathology, and as the result of their studies of the literature, and the pathological material and histories in the cases mentioned, which included a case of their own as well as material loaned them by other surgeons, they arrived at the following conclusions:

1. Paget's disease of the nipple is a primary affection beginning in the cells of the rete malpighii, potentially malignant, although lacking the ordinary characteristics of malignant disease.

2. It is identical with the disease known under the name of Paget occurring in other regions.

3. It is commonly, although not invariably, followed by glandular carcinoma in the underlying breast tissue.

4. It is precancerous in the sense that it induces epithelial changes in the superficial milk ducts and acini, which are followed by carcinoma. Occasionally, although rarely, it is followed by squamous-celled carcinoma of the nipple.

5. The disease is characterized by œdema and vacuolization of the prickle-cells, thickening of the rete, and active mitosis, also by an inflammatory reaction in the corium and a secondary hyperplasia in the milk ducts.

6. It is sharply differentiated from true eczema and scirrhus carcinoma ulcerating at the nipple, and should not be confused with superficial metastases of diffuse cancer situated near the skin.

7. The resulting tumors of the breast and the regional metastases resemble the type of breast cancer usually encountered. When the tumor originates in the skin, it infiltrates and metastasizes in the form of squamous carcinoma.

8. The common association of cancer in the breast with Paget's disease demands as the treatment for Paget's disease the radical operation which is practiced in breast cancers in general.

Illustrations show the clinical appearance of true Paget's disease, also the types of malignancy which simulate it; others demonstrate the pathology and microscopic diagnosis of the disease.

Armstrong, G. E.: Results of Operation for Malignant Tumors of the Breast. *Brit. J. Surg.*, 1915, iii, 39.

The author gives a summary of 82 operative cases of malignant tumors of the breast. He lays stress on the best advances in cutting down mortality arising from cancer, by educating the public to come as early as the disease is suspected so that it may be entirely removed, because cancer primarily is a local disease and when taken in time can be cured. Of the 82 cases in which complete operation for cancer of the breast was performed he is able to trace 65, and finds 33, or 50 per cent, of them alive and well three years after operation. If the remaining 49 may be considered to have died of recurrence, there remain 33 out of 82 cases alive and well three years after operation, or more than 40 per cent. Of the 90 mammary tumors which he reported in 1907, he finds that one is alive and well 17 years after operation; one 15 years; one 14 years; 3 ten years; 2 nine years; and in the present series, 3 seven years, 6 six years, and 5 five years. He thinks that if the present series shows better results than the first, it is chiefly because in these the disease was recognized earlier. If people would come earlier in cases of breast tumors, he thinks the recovery ought to be 70 per cent instead of 40 per cent.

The operative procedure in each case consisted in removal of the whole breast together with the sternal portion of the pectoralis major muscle, the

pectoralis minor, the glands in the axilla, the fascia covering the serratus magnus, the anterior border of the latissimus dorsi, and the upper part of the external abdominal oblique. The triangle of the neck was dissected in those cases in which it seemed to be indicated. He begins his operation by dividing the outer attachment of the pectoral muscles to the humerus and the coracoid process. In the 150 complete breast operations there was one death, a fungating mass which ought to have been cauterized, but was simply treated with carbolic acid, septicæmia resulting. He thinks there is no disability following the removal of the sternal portion of the pectoralis major and the pectoralis minor. He always insists on his students palpating the mass gently in cases of suspected mammary cancer. He thinks it is conservative surgery to remove all fibro-adenomata from the breast in order to prevent their malignant degeneration.

In closing he urges that the fight against cancer be carried on with the best weapons we have in our possession today, i.e., early diagnosis; early removal of the diseased portion; the removal of the so-called precancerous conditions when it can be done safely without causing disability; and the prevention by legislation of habits, customs, and labor conditions that have been shown to be etiological influences.

HARRY G. SLOAN.

Bubis, J. L.: Early Incision of Breast Abscesses During Lactation. *Cleveland M. J.*, 1915, xiv, 515.

Abscess of the breast is one of the most common complications of the puerperium, and it demands prompt treatment.

The most common causes are: (1) trauma, exposure to cold, infection from unclean hands, cloths, or cotton, contaminated water, and the condition of the infant's mouth; (2) caked breasts which lower resistance, and make a good nidus for infection.

According to location the abscesses are classified as superficial, generally occurring near the nipple, and intramammary or intralobular, and post-mammary.

The symptoms are: superficial pain, tenderness, redness, the skin becomes thin, and there is a slight rise in temperature. The tumor varies in size up to the size of a plum; finally, fluctuation is felt.

An intramammary abscess is more serious. It may be single or multiple, and is marked by deep-seated pain and a decided rise in temperature. The tumor at first is firm, and may not become soft until the condition is beyond repair. A dusky red color always indicates the presence of pus.

The treatment is early, prompt, and free incision; light packing, which is removed later; hot applications; support to the breast; and Beer's hyperæmia, with frequent use of the breast pump. As a rule it is not necessary to stop lactation.

The tumor may be incised before the abscess "points" if the temperature continues high and abortive treatment is not successful. T. O. BOYD.

Bunts, F. E.: Conservative Operations in Cysts of the Breast. *Ann. Surg., Phila., 1915, lxii, 246.*

The author gives the end-results of 68 cases of cysts of the breast operated on by Crile, Lower, and himself, and from the 55 replies which he received, either from the patient or the doctor, comes to the conclusion that in no instance was there cancer occurrence, that simple cysts of the breast do not ordinarily require complete breast amputation usually done in such cases, but rather holds that each case of cyst of the breast is to be judged on its own appearance, and as proof of the practicability of this procedure he notes no malignant occurrence in the cases reported. In 5 cases amputation of both breasts was performed and in 15 amputation of one breast, leaving 48 in which only a partial amputation or excision of the cyst was performed. Multiple small cysts or those with symptoms of diffuse mastitis without palpable cyst were the ones demanding most careful consideration in regard to the question of amputation, while those presenting single or even multiple well-defined cysts were the ones in which amputation was least frequent.

The average age of the cases in which total amputation was done in 20 cases was 41 years, while the average age of the cases in which excision of the cyst alone was done was 39 years. The duration of the tumor varied from one day to 18 years. The author thinks that the factors of marriage and child-bearing are of no importance as effecting the occurrence of cysts of the breast.

The final decision as to whether or not a complete operation should be performed should, in the author's estimation, be determined by the clinical and physical aspects of the tumor and of the breast in which it is found, and no arbitrary age limit should be adopted as the determining factor. He thinks that until the etiologic relationship between cysts and cancer is more definitely determined it is better surgery to remove single large cysts with a considerable section of the breast tissue containing it than to perform the total breast operation.

HARRY G. SLOAN.

Stewart, F. T.: Amputation of the Breast by a Transverse Incision. *Ann. Surg., Phila., 1915, lxii, 250.*

The author describes a method of amputating the breast by a transverse incision which he has employed in 40 cases, and cites 47 cases operated on in a similar manner by Gibbon during the past four years. The axilla is attacked first, in order to determine the extent of the lymphatic involvement and the feasibility of radical treatment. The blood-vessels supplying the breast are attacked at their origin; at the same time the lymphatic drainage of the cancerous area is interrupted to prevent dissemination of cancer-cells, and last the breast is left as a warm covering for the thorax until the final stage of the operation. The incision permits free exposure of the axillary fossa and the subscapular space, and at the same time does not cause any con-

tracting scar which might interfere with the use of the arm, or press on the blood-vessels and nerves. If closure cannot be obtained — which is rare — the raw surface is covered with pedunculated flaps from the abdomen or back. Drainage is made through the outer angle of the incision.

The incision consists of a cut skirting the upper margin of the breast made from a point on the edge of the sternum farthest from the growth, and on a level with the nipple to a point on the same level at the posterior axillary fold, following the upper contour of the breast proper. He uses black towel-ling for operative work instead of white. From this original incision the skin is undermined to the clavicle and the head of the humerus and from the sternum to the posterior axillary fold. The clavicular is separated from the costal portion of the pectoralis major, and the tendon of the latter severed close to the humerus. The pectoralis minor is cut at its point of insertion. He uses a self-retaining retractor of the Balfour type, and with the help of an assistant the entire axilla is exposed. Dissection progresses from above and within downward and outward, thoroughly cleaning out the entire gland-bearing area, and laying bare the latissimus dorsi, teres major, subscapularis, and serratus magnus. The deep fascia over the upper portion of the abdominal muscles may also be excised, although the author has not adopted this procedure as a routine measure.

The incision is completed by following the lower contour of the breast and severing the pectoralis muscles at their sternal origin.

He deems oedema of the arm immediately following an operation a favorable sign, showing that the lymphatic structures in the axillary fossa have been removed sufficiently to interrupt lymphatic drainage. (Edema appearing after several weeks is due to pressure on the vein by scar, by recurrent growth, by cancerous invasion of the vein, venous thrombosis, or a tardy lymphangitis or lymph-thrombosis, and is not always a premonitory sign of early metastasis.)

HARRY G. SLOAN.

Lent, M. F.: Artificial Pneumothorax; Report of Fifteen Cases. *J. Am. M. Ass., 1915, lxiv, 1973.*

Lent reports the results of the lung compression treatment in 30 selected cases. In 15 cases the results were unsuccessful, in the remaining 15 he reports more or less success according to the degree of lung collapse. The best results were obtained in cases in which the disease was limited to the upper portion of one lung, generally an acute progressive condition with signs of softening which had not responded to the usual therapeutic measures; and in cases with marked involvement of one lung with only a moderate infiltration of the opposite lung, preferably the apex. In cases of severe and uncontrollable hæmorrhage brilliant results have followed. In some cases of pulmonary tuberculosis, complicated by pleurisy with effusion, lung abscesses and bronchiectasis, good results have followed this

pneumothorax treatment. The complications, tuberculous laryngitis and enteritis, are also sometimes much benefited by this treatment.

When there is an extensive and progressive lesion in the opposite lung to the one to be collapsed, or when there is evidence of disseminated tuberculosis this treatment is absolutely contra-indicated. It is unwise to adopt this form of treatment when patients, even though far advanced, are doing well under the usual therapeutic measures. In basal lesions in the opposite side—endocarditis, and nephritis—the chances of course would be lessened proportionately. Lent contends that dense adhesions, while not in themselves contra-indications, are the chief cause of a large percentage of failures.

The use of the Floyd-Robinson apparatus is advocated. The patient is given a preliminary hypodermic of morphia gr. $\frac{1}{8}$; this usually is indicated for the first injection only. Because pleural adhesions are less apt to be found far away from the diseased site, Lent endeavors to find an area where there is good lung resonance, good breathing, and no adventitious sounds, preferably in the seventh or eighth interspace scapular line, remote from the diseased area. Not always can dependence be placed on percussion and auscultation; frequent attempts have to be made in different places before a free space is found. He recommends the usual skin preparation, an all glass syringe loaded with 25 per cent novocaine being used. A large sized wheel is made in the skin between the ribs, and the deeper structures cocaineized in advance of the needle. When the parietal pleura is reached the patient often feels a slight pricking sensation; this is well infiltrated. A small puncture through the skin and the dense external intercostal fascia is made with a cataract knife, and the gas needle held in the hollow of the right hand is ready for use. The needle having punctured the external and middle intercostal fascia must be made to approach the internal intercostal and costal pleura very cautiously. The rubber tubing is now connected with the needle, the obturator is pulled out and the manometer is frequently referred to. When the needle rests against the costal pleura a slight oscillation can be noticed, and if the needle is advanced slowly a good space is encountered giving a reading of 4 to 10 cm. This negative reading is greater during inspiration than expiration. When there are slight pleural adhesions the readings may not be more than 2 to 4 cm.

When a suitable space is found the cork leading to the manometer is closed and 50 ccm. of nitrogen gas is slowly introduced. The gas can be easily warmed by submerging the rubber tubing in a basin of warm water. The manometer is often consulted until the gas needed for the individual case is given. He advocates the injection of small amounts, say 300 to 500 ccm., always leaving a negative reading; then refills are given every three to five days until the lung is totally collapsed. A large needle is used for the initial injection and a

smaller one for the refills. Pleurisy with effusion may follow in as high as 50 per cent of the cases, some claim this is due to chilling of the body, some to faulty technique, and still others to the mechanical irritation of the two layers of the pleura, due to the foreign body, the nitrogen gas. It is interesting to note that the fluid in these cases invariably contains tubercular bacilli. Among the other dangers may be mentioned shock, which may be avoided by cocaineization and the use of morphine; gas embolism, which may be considered remote if the manometer is carefully noted and good free oscillations are present; emphysema, which may be either superficial or deep, and is never serious, usually disappearing in from one to three days; puncture of the lung, followed by slight bleeding, which is rarely a serious symptom; dilatation of the heart, due to too great intrathoracic pressure. The latter is very serious and for this reason the author advocates leaving the end readings at zero or rarely above +4.

In conclusion Lent points out that in a few per cent of these hopeless cases arrest of the disease or a chance to regain health is often given the patients. He advocates continuing the treatment for an indefinite period, rather than to discontinue the treatment and find that the disease is becoming active again, and the re-administration of gas impossible because of dense layers of adherent pleura.

L. B. CRAWFORD.

Cummer, C. L.: Recurrent Pneumothorax; Report of a Case, with Review of the Literature. *Am. J. M. Sc.*, 1915, cl, 222.

The author observes that while the literature is replete with studies of pneumothorax he finds very little on the recurrent phase of this condition. He cites reports by Gabbe, 1881, Vitvitski, 1892, Finny, 1898, Sale, 1907, and Hamilton, 1908, all of whom have observed well authenticated cases of recurrent pneumothorax. The case by Sale, 1907, of a young woman who had eleven recurrences is especially interesting, not only because of the number of attacks but because no history of tuberculosis could be associated with the case. All other cases give some such relation.

Cummer's case is reported quite fully: The patient, a male, aged 23 years, unmarried, general health very good, had a sudden seizure of severe pain in the right side in February, 1912, while taking a bath. His temperature was 98°, pulse 80, respiration 20, no dyspnoea, left chest markedly distended, intercostal and supraclavicular spaces filled out, heart pushed to right side. After eight days' rest all symptoms of the pneumothorax disappeared. Seventeen months thereafter the patient suffered a recurrence of the same trouble, lasting 25 days. There has been no subsequent recurrence to date. The patient is in continuous good health, a fact which may argue against tuberculosis as a cause. However, the author suggests that the pneumothorax may have served in this

case, as well as in those reported by others, as a natural therapeutic measure tending to retard the flaring up of slight tubercular foci. Yet, conclusions regarding the etiology of recurrent pneumothorax would be out of place with so little data at hand.

MATTHEW W. PICKARD.

Löwenhjelm, C., and Nyström, G.: Thoracoplasty in Pulmonary Tuberculosis (Über Thorakoplastik bei Lungentuberkulose). *Nord. med. Ark.*, Stockholm, 1914, xlvii, No. 20.

Löwenhjelm discusses the indications and Nyström the technique and results of extensive thoracoplasty in pulmonary tuberculosis. They used it in four cases with very good results. Three patients with very severe changes in one lung and slight ones in the other were very markedly improved. In one case pneumothorax treatment had been tried without success. In a fourth case complicated by tuberculosis of the larynx the condition was unchanged after operation. A. Goss.

Borelius, J.: Treatment of Metapneumonic Empyema (Die Behandlung der metapneumonischen Empyeme). *Nord. med. Ark.*, Stockholm, 1914, xlvii, No. 8.

There is practically a unanimity of opinion with reference to the treatment of tuberculous and septic empyema, but there is still a wide difference of opinion as to the treatment of empyema following pneumonia. Some surgeons favor thoracocentesis and others primary thoracotomy.

The author reports a series of 34 cases of metapneumonic empyema. There were 7 deaths and 27 recoveries. Five cases were treated by thoracocentesis, the time required varying from 30 to 45 days, average 37 days; 12 cases were treated with thoracocentesis and secondary thoracotomy. The time required was 36 to 230 days, average 107. Seventeen cases were treated by primary thoracotomy and the time required for recovery was 21 to 120 days, average 52. In secondary thoracotomy the time required for recovery was extremely long, average 107 days; the author concludes that primary thoracotomy is to be preferred. A. Goss.

Desgouttes, L., and Bressot, E.: Immediate Symptoms of Penetrating Wounds of the Thorax (Considérations sur les symptômes immédiats des plaies pénétrantes de poitrine). *Lyon chir.*, 1915, xii, 266.

In a number of cases sent to them with a diagnosis of penetrating wound of the thorax the authors have found the projectiles lodged in the thoracic wall, with no injury of the lungs or pleura. They point out the fact that neither hæmoptysis nor hæmothorax can be considered an infallible sign of injury of the lung, as they may be caused simply by contusion of the lung from the injury of the thoracic wall. Neither is there any constant relation between the amount of hæmoptysis and hæmothorax. There is no functional sign that enables one to make

an absolute diagnosis of injury of the lung, nor to determine its severity. Only a minute examination and careful exploration of the wound suffices for diagnosis. In case of hæmorrhage from the lungs the classical non-surgical treatment should be given. Only in case of injury to the parietal arteries, the intercostal or mammary, is local surgical intervention justified. A. Goss.

Le Fort, R.: Superficial Injuries of the Thorax and Hæmoptysis (Plaies thoraciques superficielles et hémoptysies). *Bull. et mèm. Soc. de chir. de Par.*, 1915, xli, 1569.

Le Fort describes 9 cases of pulmonary hæmorrhage of varying degrees of intensity, one of them fatal, caused by superficial wounds of the thorax, without any direct injury of the lungs or pleura. Autopsy in the fatal case demonstrated that there was no lesion of the lungs. This is true not only of shots at close range and striking the thorax directly from the front, but of bullets from a considerable distance passing through the thoracic wall laterally; in fact, the degree of hæmorrhage does not appear to be parallel with the nearness of the shot nor the gravity or depth of the parietal injury. What is true of the lungs is probably true of the abdomen, and a bloody stool or hæmaturia does not prove that there has been direct injury of the intestine or bladder. It is certainly true of the skull, for the author has seen aphasias and monoplegias without any lesion of the corresponding center. This also explains certain injuries of nerves and blood-vessels which have evidently not been in the direct path of the projectile. A. Goss.

TRACHEA AND LUNGS

Volkman, J.: Gunshot Injuries of the Lungs. (Zur Klinik der Lungenschüsse). *Deutsche Ztschr. f. Chir.*, 1915, cxxxiii, 425.

The author reports his work at the second base hospital at Stuttgart. Some of the cases of gunshot injury of the thorax arrived the day after the wound was received, and were under observation until they completely recovered, some of them in convalescent homes in the neighborhood. The author discusses the subject on the basis of his own material and that available in the literature of the present war.

In the early days of the war when the armies were moving the whole thorax was exposed to fire; later, only the upper part of the thorax and the shoulders were exposed. Among 55 cases 32, or 58.2 per cent, were infantry wounds; 10, or 18.2 per cent, were caused by shrapnel; the remainder were due to artillery fire. In 56.4 per cent of the cases the bullets had passed entirely through the thorax, in 43.6 per cent they had lodged. In 91 per cent of the cases hæmoptysis was the predominating symptom, not lasting as a rule longer than 5 days. A second important symptom was pain, caused by involvement of the phrenic nerve, and often seeming to be a shoulder pain.

The cases are classified clinically as follows:

1. Simple lung injuries without complications, no effusion or signs of inflammation being present.

2. Complicated injuries of the lung: (1) with hæmorrhagic, sanguinolent, serous, or purulent effusion, (2) with pneumothorax and emphysema, (3) with infiltration of the lung tissue.

The details of these different forms of injury cannot well be given in abstract. An interesting and important discussion is given of the röntgenography of the different forms of injury, or rather of the different consequences of injury such as exudates, pneumothorax, secondary induration of the pleura, and pneumonic conditions.

Volkman uses puncture more frequently in treatment than he did at first; the blood obtained by puncture does not coagulate. Absorption takes place at varying intervals of time. In 4 cases he observed secondary empyema which of course demanded rib resection. A closed pneumothorax is left alone or the air is removed by suction; an open one is closed if possible. The after-treatment consists in light and air treatment, respiratory exercises, and gymnastics. The mortality in his cases was 6.3 per cent. Of 16 patients treated in the first three months of the war and examined for ultimate results, 4 of them, 25 per cent, are entirely well and do not show any subjective or objective signs of the injury. All the others show some anomaly, such as high position and decreased mobility of the diaphragm, especially fixation in the region of the phrenicocostal sinus. The shadow in the röntgen picture of the diseased side varies in depth; induration is generally to be demonstrated. There were subjective symptoms of different kinds corresponding to these objective findings. The average duration of the sickness was eight to nine weeks.

A. Goss.

Richards, G. L.: Report of a Foreign Body in the Lung, the Primary Diagnosis of Which Was Made by a Blood Examination; Removal; Recovery. *Tr. Am. Laryngol. Ass.,* Niagara Falls, 1915, June.

Richards reported the case of a patient, a male aged 25, who had had occasional attacks of asthmatic breathing, bronchitis, and chills since early childhood. The blood picture revealed a moderately steady leucocytosis, and this without physical signs

suggested the possibility of a foreign body. A röntgenogram disclosed a tack in the right bronchus, which was removed.

SMITH reported a case of a man who had inhaled a dentist's bue. X-rays showed a foreign body in the left upper bronchus high up. Four different bronchoscopists failed to extract the bue and finally a part of the man's lung was removed. The patient died.

HUBBARD spoke of foreign bodies becoming encysted and thus preventing symptoms arising.

RICHARDS suggested that possible futile attempts were continued too long for the good of the patient. INGALS thought that one hour should be the limit.

OTTO M. ROTT.

HEART AND VASCULAR SYSTEM

Long, J. H.: Cardiorrhaphy. *Long Island M. J.,* 1915, ix, 321.

The author reports a case of stab wound of the heart, which an Italian laborer, aged 32, inflicted upon himself. Shock was pronounced, and the pulse was imperceptible. The patient was revived by hypodermoclysis and was operated upon 45 minutes after admission.

Under ether-oxygen intratracheal anæsthesia, a trap-door involving the third, fourth, and fifth ribs was made. About a pint of fluid and clotted blood was mopped out of the pleural cavity. There was no hæmopericardium.

A wound one-half inch long was found in the anterolateral wall of the left auricle, completely plugged by the tip of the left auricular appendix and the upper margin of a pericardial opening.

The wound in the heart was closed by a continuous chromic catgut suture; sutures were introduced in diastole; and rubber tube drainage of the pleural cavity was instituted. The convalescence was complicated by a moderate serous effusion in the pericardial and both pleural cavities. The patient was discharged on the twenty-fifth day, completely well.

The author gives a historical résumé of heart injuries from the time of Ambrose Paré to the present time, finding, including his own case, 30 American cases. He states that cardiorrhaphy has raised the percentage of recoveries from 15 per cent to 40 per cent.

LUCIAN H. LANDRY.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Pantzer, H. O.: A Prognostic Sign in Acute Suppurative Peritonitis. *Tr. Am. Ass. Obst & Gynec.,* Pittsburgh, 1915, Sept.

The author affirms that the presence within the abdomen in peritonitis, of a free or encapsulated serous or seropurulent fluid, which is practically

without odor, by the side of encapsulated foul material indicates a strong systemic defensive activity of distinct prognostic value.

Observations, dating back to June, 1906, are the basis for publication of this finding which warrants the prognosis that Nature is able to cope with the infection successfully. Should this observation find further confirmation, academic research into

this matter is suggested; for example, the scientific study of the defensive fluids produced under such disease conditions with the hope of finding the sero-therapeutic agent.

Carslaw, R. B.: The Character, Significance, and Prognostic Value of Peritoneal Exudates. *Brit. J. Surg.*, 1915, iii, 8.

The author gives the results of an investigation of peritoneal exudates based on the examination of 18 cases of appendicitis, 4 cases of perforated gastric or duodenal ulcer, 1 tubo-ovarian abscess, and 1 femoral hernia, operated on in 1914. The peritoneal exudate is obtained at operation by means of long glass pipettes introduced through the wound. Smears are made from this material and cultures taken. The various methods of staining and differentiating the cells encountered are detailed. The indophenol-synthesis test is relied upon for the oxydase to differentiate between the endothelial cells and the large mononuclear leucocytes. The appearance and character of the stained cells recovered in the exudate are described at length. The author thinks the endothelial cells arise from the omentum principally, and in the later stage of inflammation the endothelium from this structure may be almost entirely shed.

The peritoneum of both the parietes and viscera also contribute endothelial cells to the exudate. These cells are phagocytic to bacteria and more so with the duration of the inflammation; they engulf polymorphonuclear leucocytes, red cells, and bacteria.

The ultimate fate of the endothelial cells in the exudate is to degenerate whether they have ingested other cells or not.

Phagocytosis of bacteria by large mononuclear leucocytes is neither so early nor so extensive as the phagocytic activity of the endothelial cells. Carslaw is convinced of the advisability of removing the source of bacterial supply in peritonitis, because of the marked change seen in polymorphonuclear leucocytes 60 hours after such removal. These cells degenerate and break down in the peritoneal fluid, or may be ingested and digested by endothelial cells. Lymphocytes are not phagocytic to bacteria, show no degenerative change, and are not ingested by other cells. They do not take part in acute inflammation, but are found in large numbers in the fluid resulting from a mild irritant acting over a long period. The normal peritoneal fluid is serous in character, small in amount, and contains very few cells.

In discussing the value of examining peritoneal exudate with relation to peritonitis in the human, the author draws attention to the following facts:

Peritonitis in the human varies in many respects from that in the animal, especially as regards the tendency to localization. The virulence of the casual organism plays an important part in the success or otherwise of the attempts at localization. He details the history and findings of his case at

length and draws the following conclusion: In all cases of intra-abdominal inflammation peritoneal fluid increases in quantity and changes in character. Clear or turbid fluid bordering on a walled-off abscess cavity is an indication of its reparative action.

The prognostic value of an examination of the exudate is based on the degree of phagocytosis to bacteria occurring in the polymorphonuclear leucocytes in relation to the number of free bacteria in the exudate. Phagocytosis to cells, when present, is a favorable sign, but not so important as phagocytosis to bacteria. The duration of the bacterial invasion must always be borne in mind when considering the significance of phagocytosis to bacteria, the relative number of various cells, and the amount of degeneration. Extensive bacterial phagocytosis is not expected within the first few hours, but is looked for in the later stages. A relatively large proportion of polymorphonuclear leucocytes is to be expected in cases of long duration, but in early cases one would like to see a fair proportion of large mononuclear leucocytes and endothelial cells.

Degeneration of the polymorphonuclear leucocytes if seen within a few hours of the invasion is an unfavorable sign, but if seen in the later stages need not give great anxiety.

The author thinks that by examination of the exudate in various forms of peritonitis, he has helped to differentiate cases where drainage may be necessary and where it may not. And, also, it gives him a fair idea of the prognosis in each individual case. Some very clear pictures of the cells encountered in the exudates are shown in the original.

HARRY G. SLOAN.

Ligabue, P.: Simple Laparotomy in Tubercular Peritonitis (La laparotomia semplice nella peritonite tuberculare). *Clin. chir.*, 1915, xxii, No. 11.

The author reports in detail 66 cases of tubercular peritonitis which were treated by simple laparotomy and kept under observation for a long time to learn the ultimate results.

Females are affected most frequently — 81.8 per cent — but the difference in the sexes is not so great in childhood. The disease is particularly apt to occur at the end of the second and beginning of the third decade of life, and occurs more frequently in the winter and spring than in summer and autumn.

In 25.75 per cent of the cases the peritonitis was secondary to tuberculosis of the pleura, lungs, bones, or glands. The cases that were diagnosed early were mostly fibrous miliary forms. Caseous processes and peritoneal adhesions were found in the older cases. The great omentum was generally more involved than the visceral peritoneum; the parietal peritoneum was affected most around the umbilicus. In old cases there was often extensive proliferation of connective tissue, so that the tubercles appeared to be surrounded with connective tissue, which sometimes penetrated into the center of the tubercle. The tubercles were only very

slightly vascular. Bacilli were found in some cases, particularly in the recurrent and unhealed ones. Pirquet's reaction has proved a valuable means of diagnosis, particularly in children.

Laparotomy brought about permanent recovery in 65.07 per cent of the cases. The shorter the duration of the disease, the better the results were. In acute and subacute febrile conditions operation should not be performed. The purely fibrous forms gave 100 per cent recoveries. The operation should always be combined with a rational internal treatment. Tubercular foci in other organs are not a contra-indication to operation, as they are often favorably influenced by the increased resistance of the body induced by the laparotomy. The results of operation are poor if there is diffuse tuberculosis of the lung. Post-operative disturbances from extension of the tubercular process are unusual, because laparotomy as a rule brings about rapid improvement and recovery, so that the tubercular process does not have time for extension.

The best results are produced by simple laparotomy with free opening of the abdominal cavity, without irrigation or disinfection or any other treatment of the diseased peritoneum. The recovery is induced primarily by the dissolving and absorption of the epitheloid cells. The giant cells resist this dissolution for a long time, the lymph cells contract and disappear slowly. Laparotomy causes neither inflammatory reaction nor connective-tissue proliferation. The healing of the tubercles is brought about by the blood serum in the form of a peritoneal exudate. The antibodies and opsonins contained in the exudate kill or weaken the tubercle bacilli and so prepare the way for the histological destruction of the tubercles. Laparotomy also removes a peritoneal exudate that is rich in tubercular toxins; it likewise produces marked hyperæmia and a blood serum exudate that is rich in antibodies.

A. Goss.

Pettit, J. A.: Some Points of Technique in Abdominal Wound Closure. *Northwest Med.*, 1915, vii, 225.

The author makes the following claims for careful suturing of the superficial fascia: (1) It eliminates possible suppuration due to bloody or serous accumulations in what might otherwise be a dead space. (2) It tends to prevent post-operative broadening of the skin scar. (3) By running a continuous catgut stitch through the superficial fascia (the untied end starting through the skin at one end of the incision) and returning as a subcutaneous stitch, the knot can be so tied outside the skin over a small piece of gauze, that by cutting one end both the fascia and subcutaneous sutures can be removed, providing the catgut does not absorb in a reasonable length of time.

In tying reinforcement silk-worm gut sutures over a piece of gauze, the following points are essential: (1) Antiseptic gauze should be used instead of plain gauze because it prevents saprophytic

action in blood or serum which may ooze from the incision, thereby avoiding skin irritation, and the pad may be left in place two weeks as safely as one. (2) By spreading out the lower end of the gauze in a fan-shape and sealing it to the skin with collodion, the danger of contamination is almost eliminated in the event of the abdominal dressings slipping upward.

GASTRO-INTESTINAL TRACT

Smithies, F.: Syphilis of the Stomach; a Clinical Study of Twenty-Six Instances of Dyspepsia Associated with Positive Wassermann-Noguchi Reactions. *J. Am. M. Ass.*, 1915, lxx, 572.

The basis of Smithies' article is a report of 26 cases of dyspepsia with positive Wassermann-Noguchi tests.

In a series of 1,603 demonstrable stomach lesions, 1.6 per cent were found to be syphilitic. The condition rarely occurs as a part of a general syphilis. The lesion is either a diffuse gummatous infiltration of the wall of the stomach or a definitely localized nodule or ulcer, the latter having ragged edges and extending into the mucosa. Nodules and ulcers may be single or multiple. Stenoses, malformations, and perigastric adhesions occur.

In the series there were 15 men and 11 women; the ages varied from 20 to 66, the average being about 42. The Wassermann-Noguchi reactions were positive in all cases.

The clinical course averaged 8 years in duration. According to the symptoms the cases are classified in three groups as follows:

1. Persistent gastric trouble in patients who had been previously well.
 2. Cases in which years of dyspepsia followed an antecedent intermittent trouble.
 3. Dyspepsia in patients who had had a long period of freedom from previous gastric trouble.
- There were 2 cases in group 1, 10 in group 2, and 14 in group 3.

In the first group abrupt onset of pain, constant soreness, loss of weight, and pyrosis were the chief symptoms. In group 2 the symptoms were those of an ordinary gastric ulcer of the recurrent type. A positive clinical differentiation here would be impossible. In this group 3 had taken ulcer "cures"; 4 were explored and gastro-enterostomies done; 2 showed distinct ulcers. In 8 of the 10 cases of this group the X-ray showed the lesion. Gastric analysis showed a relatively high total and free acidity.

The cases of group 3 were not typical of any intragastric disease. Symptoms appeared at long and irregular intervals. In 7 explorations ulcers or nodules were found in 6.

In the entire 26 cases HCl was absent twice. The average total HCl was 51. There was blood in the stomach contents in 26 per cent. The X-ray revealed no pathognomonic signs to separate the condition from ulcer or carcinoma.

In the treatment, salvarsan and mercury were found to be most satisfactory.

The prognosis is not especially good. In the continuous stages of the disease there rarely is a complete abatement of the symptoms and signs. Four cases of the series were free from symptoms, for a year, 3 were not benefited at all, and 12 showed some amelioration of their symptoms.

J. R. BUCHBINDER.

Smithies, F.: The Etiologic Relationship Existing Between Gastric Ulcer and Gastric Cancer; an Analysis of 921 Cases of Gastric Cancer and 500 Cases of Gastric Ulcer. Tr. Mississippi Valley M. Ass., Lexington, 1915, Oct.

The author reviews certain phases suggested by the study of 921 operatively and pathologically demonstrated cases of gastric cancer and of 500 similarly proved instances of benign peptic ulcer. Particular attention has been paid to the search for actual facts demonstrating the existence of an etiologic relationship between gastric cancer and gastric ulcer.

It seems to have been shown that benign gastric ulcer can be produced in a multitude of ways, the method of production having but a relative effect upon the ulcer resulting, pathologically. It seems that in a given gastric ulcer it is impossible to prognose its course, duration, or type of termination.

There are no experimental, clinical, or pathological data that absolutely demonstrate the mechanism of the malignant transition of benign gastric ulcer. This problem will apparently remain unsolved until the exact nature of the mechanism of malignant processes in general is determined.

Clinically, the histories of instances of gastric cancer strongly suggest that such neoplasms arise most frequently from chronic calloused gastric ulcers, clinically benign. It would appear that clinically it is impossible to segregate that group of chronic gastric ulcers which will change to cancers from those which will continue as self-limited benign processes. On account of the uncertainty in this regard, free excision of all chronic gastric ulcers should be performed whenever such procedure is mechanically possible. That this is a most important feature of cancer prophylaxis is proved by the fact that when gastric cancer can be definitely diagnosed, clinically and macroscopically, at laparotomy, hope of radical cure is slight. The knowledge of the foregoing facts imposes a normal responsibility upon internists and surgeons with respect both to the individual patient and the human family.

Walton, A. J.: Chronic Gastric Ulcer. Clin. J., 1915, xlv, 233.

The author analyzes the statistics of 55 cases of chronic gastric ulcer. In forty-four of the cases the ulcers were circular in outline and, as a rule, not more than one-half inch across, contrary to the usual conception. They were deeply punched out,

with an area of induration surrounding them, and a peritoneum of characteristic stippled appearance. When they were on the posterior wall they were usually adherent to the pancreas. In 30 cases the ulcers were at or about the lesser curvature and at the pylorus in only 14 cases.

The symptoms extended over a period of several years, with attacks lasting 1 to 2 weeks, and at intervals of 2 weeks to 5 months, or even several years.

1. Pain appears from one-half to 2 hours after food-taking, and is very severe. It usually radiates from the epigastrium, especially in long-standing cases. In the series 24 cases showed pain radiating to the back and to the left shoulder, and 23 gave a history of pain for ten or more years. An adhesion to the pancreas is to be suspected when the pain is constant, very severe, and always radiating to the left shoulder. In 15 cases, food relieved the pain and in 7 of these the ulcer was found at the pylorus, while in only 4 was it situated at the lesser curvature.

2. Vomiting occurred in 44 cases, usually at the height of the pain, and especially if pain was severe; hence, it was infrequent in the earlier stages. The pain was relieved by vomiting in all but one case. In pyloric obstruction the vomitus is of considerable amount, is ejected forcibly, and contains undigested and fermented food.

3. Hæmatemesis and melæna occurred in 50 per cent of the cases. It varied in amount, usually ceased spontaneously after vomiting, and rarely caused anæmia. In only 1 case was operation necessary for bleeding.

4. The appetite as a rule is unaltered. In only 4 cases was a decrease of appetite found, and 3 of these showed low acidity.

5. In the series 36 had a test-meal, and in 33 of these the total acidity and free HCl was only slightly above normal, but this was constant; whereas, in gastric cancer, gall-stones, and visceroptosis the acidity and free HCl are always below normal.

6. Unless there is obstruction to the food, there is no marked loss of weight, provided there has been no voluntary starvation.

The following points are noted in regard to diagnosis:

1. Visceroptosis occurs in women from 25 to 40. Pain is more diffuse, with no relation to food-taking, and attacks are not well defined. Vomiting is more marked, and a test-meal shows low acidity and free HCl. When gastric ulcer is present, in addition, the diagnosis is almost impossible.

2. Gastric cancer has a short history. In a patient over 35 with no definite attacks, but steady increase in condition, there is constant dull pain, marked loss of appetite, and low acidity, and HCl differentiates ulcer from cancer.

3. In duodenal ulcer, pain is more severe at a later period after food-taking. The pain awakens the patient at night and relief is found by taking

food or alkalies. Vomiting is absent and there is a marked increase in free HCl.

4. With gall-stones there are usually no intervals of complete freedom from symptoms. The pain is not so severe as with ulcer and it appears immediately upon taking food. Vomiting is present, but affords no relief from pain. There is also tenderness over the gall-bladder region.

5. With appendix dyspepsia the symptoms are usually less severe and more continuous, with marked tenderness over the appendix. However, the diagnosis is difficult and the appendix should always be considered as a likely cause of gastric symptoms.

There is no medical treatment for chronic gastric ulcer, although it may be tried in the first attack. By surgery, the symptoms are overcome, and danger of recurrence prevented.

In the author's series 2 died: one from bronchopneumonia and the other from extreme asthenia due to previous hæmorrhages. In 49 cases traced, 37 are cured: 4 after 18 months, 11 after a year, and 12 after 6 months. The remaining 10 complain of minor symptoms, but all are 6 months post-operative.

PHILLIPS M. CHASE.

Brown, T. R., and Gaither, E. H.: Some Observations on Diagnosis of Cancer of Stomach. *Maryland M. J.*, 1915, lviii, 167.

From a study of upwards of 200 cases of achylia^s of various types, some benign and some malignant, the Wolff and Junghan's test has been found positive in over 80 per cent of cases subsequently determined to be malignant, and positive in no more than 10 per cent of cases in which subsequent history showed beyond question that the condition was benign. These figures are certainly sufficiently striking to warrant the systematic employment of this test in all cases in which free hydrochloric acid is absent in the stomach after the Ewald test-meal. Unfortunately, the test is obviously not applicable where free hydrochloric acid is still present in the stomach and, therefore, in the broader sense, is not a test for the very early recognition of gastric cancer. By reason of the fact that clinical studies demonstrate that many cases show a disappearance of free hydrochloric acid as a comparatively early symptom, the authors feel that the test is well worthy of employment and that there is real hope that in some cases, at least, it may result in operation followed by complete removal in a certain, if small, percentage of cases.. EDWARD L. CORNELL.

Bartlett, W.: Original Work on Exclusion of the Pyloric Antrum for Ulcer. *Lancet-Clin.*, 1915, xciv, 98.

Bartlett gives a brief report of a new method of pyloric exclusion conceived by the author, and complete clinical records of 27 cases of gastric ulcer, in 7 of which his method of pyloric exclusion was used.

In 1892 Doyen first recorded transverse section of the stomach with blind closure of the ends. Von

Eiselsberg followed three years later with a similar procedure. Jonnesco, Girard, Grossman, Kuttner, and others have indorsed this procedure.

Functional exclusion was first suggested to the author by a case wherein he resected the larger part of the minor curvature. Upon approximation, the pylorus approached the cardia at without encroachment on the lumen. This was followed by complete functional obstruction. Experimental work on dogs showed that better results were obtained by incision of the major curvature. X-ray plates taken later showed complete obstruction. Three patients were so operated upon with uneventful recoveries and apparent cures.

Later, a method was devised of building a septum just proximal to the pylorus without invasion of either curvature. Of 7 patients so operated upon, 5 were apparently cured.

The detailed clinical histories are given of 27 cases of gastric ulcer in which pyloric occlusion in various ways was done, i.e., division of the stomach, by skewer, by fascial band, and by suture. In 7 of these cases the above method of exclusion was used, with excellent results.

Bartlett's conclusions are:

1. The method is of proven satisfaction.
2. It gives rest to ulcer area.
3. It relieves pain.
4. It is the simplest treatment for ulcer perforating into other organs.

PHILLIPS M. CHASE.

Lieblein, V.: Jejunal and Gastrojejunal Ulcer After Gastro-Enterostomy (Das Ulcus jejuni und Ulcus Gastrojejunale nach Gastroenterostomie). *Zentralbl. f. d. Grenzgeb. d. Med. u. Chir.*, 1915, xix, 64.

In his article of over 100 pages Lieblein gives a brief review of 155 cases from the literature and discusses in detail the views of various authors on the etiology, pathological anatomy, symptomatology, course, prognosis, and treatment of peptic ulcer following gastro-enterostomy.

His conclusions on the subject are as follows: The best way to avoid peptic ulcer would be to perform the operations that have not been known to be followed by it; viz., gastroduodenostomy and plastic operation on the pylorus. These come the nearest to restoring the physiological conditions. However, plastic operations on the pylorus have been practically abandoned and gastroduodenostomy is much more difficult to perform than gastro-enterostomy, and in many cases cannot be done at all. It could never become the operation of choice for benign diseases of the stomach; therefore gastro-enterostomy must still be performed in the majority of cases, but it is advisable to select the method that has been shown by experience to be followed by the fewest cases of peptic ulcer; that is, posterior gastro-enterostomy with a short afferent loop. It is very important in making the loop to avoid any trauma that might interfere with the circulation.

Lieblein is inclined to think that trauma during

operation is quite an important factor in the production of peptic ulcer. All prostheses should be avoided because when they are used the wound can heal only by granulation. The opening should be made as wide as possible. There should be careful coaptation of the stomach and intestinal mucous membrane, and a suitable dietetic treatment should be inaugurated after the operation to avoid hyperacidity. All foods should be prohibited which have a tendency to increase stomach secretion and acidity. Dujarière advises complete abstinence from alcohol and a limited use of meat, fish, and eggs. Paterson also advises the patient to refrain from eating meat for 6 months. It remains to be seen whether observance of these rules will prevent the occurrence of peptic ulcer.

A. Goss.

Strauss, L.: Ulcer of the Duodenum (Einiges aus der Praxis über das Ulcus duodeni). *Therap. d. Gegenw.*, 1915, lvi, 258.

It is important to diagnose ulcer of the duodenum, as otherwise it may threaten life by perforation or hæmorrhage. Ulcers of the anterior and posterior walls are quite different in their pathological anatomy as well as in their clinical course. The former shows more of a tendency to perforation, the latter to hæmorrhage.

Strauss describes two cases, one of each variety. Both were in men in the forties, very active and subject to great nervous tension. The first had had a high degree of acidity for years and had been treated in various sanatoria. The pains became so severe as to be almost unbearable and he went to Strauss' hospital for treatment. That night signs of peritonitis developed and he died the next morning. Autopsy showed a perforated duodenal ulcer.

The other patient had had almost the same symptoms, but in addition he had passed blood, which he thought was due to hæmorrhoids. When he came for treatment he was so weak that, although the diagnosis of duodenal ulcer was made, it was thought best not to operate. All food and liquid was withdrawn for 24 hours, only salt solution being given per rectum by the drop method. After 24 hours sips of water were given and after three days sips of iced milk. The man recovered and has been well for three months. If the symptoms return immediate treatment will be indicated.

Strauss believes in the theory of the nervous origin of duodenal ulcer, and if patients cannot be freed from nervous strain they should be operated upon; if they can, medical treatment will suffice. In men over 40 with nervous dyspepsia and hyperacidity ulcer of the duodenum should always be suspected.

A. Goss.

Whipple, G. H.: Intestinal Obstruction; a Proteose Intoxication. *J. Am. M. Ass.*, 1915, lxx, 476.

By dog experimentation the author has succeeded in obtaining the same poison from the fluid above an

intestinal obstruction, from a closed washed loop of small intestine, or from the mucosa of a closed loop or a loop draining externally through an enterostomy wound. Dogs can be immunized to a slight degree by the administration of sublethal doses of this poison. This poison must be produced by bacterial activity, perverted activity of the loop mucosa, or by both factors in conjunction. It has been demonstrated that the absorption of this poison does not take place from the lumen of the intestine but from the mucosa; furthermore, increasing the quantity of poison in the lumen does not increase the absorption. Stripping or destroying the mucosa prevents absorption.

The chemical nature of the poison in question has been determined by a process which can yield only a primary proteose. The dried poison has been successfully isolated and it has been shown that the intravenous administration of 100 mg. will fatally poison a 15-pound dog. The poison is eliminated in the urine. This fact explains the benefit to be derived from diuresis in intestinal obstruction. The injection of the proteose causes a great rise in the incoagulable nitrogen of the blood. Dogs with intestinal obstruction likewise show a rise in the incoagulable nitrogen of the blood which seems to depend upon the intensity and rapidity of the intoxication. This fact is of much value in diagnosis and prognosis.

E. FISCHEL.

McGlannan, A.: Intestinal Obstruction. *J. Am. M. Ass.*, 1915, lxx, 673.

A series of 276 cases was studied, in 161 of which the obstruction was in the small intestine, in 75 in the large intestine, and in 40 it was not definitely located. The mortality for the entire series was 45.7 per cent. Experimental work done to determine the cause of death shows that the secretion of the duodenal mucosa plays an important part and that the essential cause is the absorption of a chemical compound of the cholin group of substances. Toxæmia is the real cause of the high mortality as evidenced by the figures of this series: toxæmia, 75 per cent; peritonitis, 12 per cent; post-operative shock, 5 per cent; other causes, 8 per cent.

Toxæmia is the fatal factor in obstruction, and it is difficult to combat as there is no certain detoxicating agent. The only hope for a reduction of the high mortality lies in the early recognition of the condition and prompt surgical interference.

The clinical course is divided into three stages: (1) onset, (2) compensation, and (3) toxæmia. The symptoms of the first stage are pain, nausea, and vomiting, with or without constipation or diarrhoea. The pain is not relieved by enemata or gastric lavage, and this fact is sufficient to warrant diagnosis and operation. The second stage is characterized by persistent pain, visible peristalsis, local tenderness, etc.; frequently gangrene and local peritonitis are present. In the third stage the toxæmia overshadows other features.

Forty per cent of post-operative obstructions and

10 per cent of all cases followed drainage operations for appendicitis, a strong argument for prompt operation in appendicitis and careful covering of surfaces in other procedures as many cases were due to involvement of an intestinal coil in the adhesions resulting from the original operation.

Operative procedures vary with the stage they are performed in. In the first stage relief of the obstruction is sufficient. In the second stage the operation varies with the extent of the gangrene and the general condition of the patient. Resection and anastomosis is the ideal operation, but often some expedient must be utilized. In the third stage enterostomy may be the only operation the condition of the patient will justify, but no matter what is done, an enterostomy should be added at this time, as emptying the obstructed loop has a decided effect upon the toxæmia. When once developed the toxæmia must be energetically treated regardless of what is done to the obstruction. Means of combating toxæmia comprise: enterostomy to empty the obstructed loop of its contents, which is probably the source of the toxæmia; the use of large amounts of water, best by transfusion, in order to prevent dehydration and to stimulate secretion; the injection of epinephrin intravenously or with the subcutaneous solution to overcome the effect of the toxin on the heart and blood-pressure.

E. K. ARMSTRONG.

Hall, R. B.: Report of a Case of Gall-Stone Causing Intestinal Obstruction and Volvulus. *Tr. Am. Ass. Obst. & Gynec.*, Pittsburgh, 1915, Sept.

Hall reports a case of intestinal obstruction and volvulus, caused by a large gall-stone. He emphasizes the statement that the profession generally do not regard gall-stones, in which the patient is not a great sufferer, as surgical. They are treated by their physician most contentedly and hopefully with very indefinite results, so far as any permanent relief is concerned, being variously described by such vague terms as stomach symptoms, discomfort after meals, indigestion, neuralgia, gastralgia, liver derangement, etc., and treated for years without any permanent benefit. Hall believes these cases are surgical and recommends exploratory operation in all those chronic cases in which there is a clear past history of one or more acute attacks. If an exploration were made at the time of the acute attack, the operation would not be serious and many of the serious complications that are likely to develop later would be avoided.

In cases in which the stone, through ulceration, has passed into the bowel, the patients are subjected to great danger, even if they do survive. That any of them survive the many dangers attending this tedious process is marvelous. When intestinal obstruction occurs, it is so many years after the acute attack, that the real cause is not recognized until revealed at the time of the operation or autopsy. The long past history of gall-stones is ignored or forgotten.

Wolfsohn, G.: Appendicitis and Typhoid (Appendicitis und Typhus). *Berl. klin. Wchnschr.*, 1915, lii, 872.

Wolfsohn has had occasion within the past few months to operate on a series of appendicitis cases in a military hospital. The symptoms differed in a number of particulars from the typical picture of appendicitis. The patients were not taken sick suddenly, but for days or possibly weeks had felt tired and depressed, had headache, pains in the limbs, etc. They had attacks of stubborn diarrhœa, sometimes with blood in the stools. They had moderate elevation of temperature, and the pulse was strong and full and corresponded in rapidity to the temperature. Their appearance was not that characteristic of peritoneal involvement, and there was no rigidity of the abdominal walls. The region of the appendix was sensitive on pressure. There was no vomiting. The symptoms were quite like those of typhoid, but bacterial examination was negative.

In 10 such cases as described above, Wolfsohn operated because the pain in the region of the appendix and the bloody diarrhœa persisted in spite of expectant treatment. The appendix showed only comparatively slight lesions, consisting of small hæmorrhages or superficial erosions, but all the symptoms disappeared after operation and the patients were well within ten to fourteen days. Wolfsohn suspected that these cases might be due to typhoid bacilli and had the appendices from his last 28 cases of appendectomy examined. He found typhoid or paratyphoid bacilli in the internal wall of the appendix in 5 cases, although repeated examinations had shown the urine, fæces, and blood to be free from bacilli. One of the cases was acute with the symptoms of perforative peritonitis, 2 others were more or less acute, while the other 2 showed the clinical picture described above. All of them recovered after appendectomy. He concludes that the bacteria were carried to the appendix through the blood current and found there a point of least resistance; the fact that they produced a local reaction there without causing a general typhoid infection was due not to decreased virulence on the part of the bacilli, but to increased defense on the part of the body, for all of these patients had been vaccinated one or more times for typhoid fever.

A. Goss.

Russ, W. B.: Chronic Intestinal Stasis with Infection from a Surgical Point of View. *J. Am. M. Ass.*, 1915, lxxv, 763.

A strong plea is made by Russ for the adoption of a more conservative surgical viewpoint and for the banishment of indiscriminate short-circuiting and other intestinal procedures.

The class of patients affected with this condition are usually those of the intense neurotic and viscerotonic type, who, except under the most favorable conditions, are unable to withstand the ordinary wear and tear of life. Obstinate constipa-

tion with resultant lowered resistance predispose these patients to infection. This infection may not be serious until the local immunizing mechanism of the bowel and the general systemic defenses are overcome.

As a rule, these cases are not primarily surgical, and under proper treatment very few need ever become surgical. However, they are preëminently institutional cases, inasmuch as they require carefully regulated and prolonged treatment.

In those deemed surgical, a strong plea is made not to destroy by operation the future functional usefulness of the bowel. Those which colectomy appears to relieve for a time, no doubt could be permanently cured by less radical means. Short-circuiting of the bowel is to be condemned and classed with discredited past surgical "triumphs" such as nephropexy and oöphorectomy.

The ideal operation must (1) secure easy and complete evacuation; (2) relieve back pressure and reflux into the ileum; (3) provide a means for treatment of infection; (4) cure chronic appendicitis; and (5) preserve the functional usefulness of the colon and ileum.

PHILLIPS M. CHASE.

Rost, F.: Surgical Treatment of Chronic Constipation (Beitrag zur Lehre von der chronischen Obstipation und ihrer chirurgischen Behandlung). *Mitt. a. d. Grenzgeb. d. Med. u. Chir.*, 1915, xxviii, 627.

Rost, assistant at the Wilms surgical clinic at the University of Heidelberg, in an article of 64 pages gives a thorough review of the surgical treatment of chronic constipation, illustrated with röntgenograms showing the different types of constipation described. Illustrative cases of the different types are also described. Two factors have contributed largely to progress in this subject in recent years, röntgen examination and surgical treatment for constipation. The physiology of the movements of the large intestine and of defecation are discussed.

Many cases of constipation are due to interference with defecation, either from mechanical obstacles, malformations of the rectum, spasm of the sphincter, or derangement of the motility of the lower colon or accessory muscles due to reflex impulses generated in the sensory tracts. In these cases of proctogenous constipation fæces may collect in the cæcum also, but of course resection of the cæcum does no good.

The spastic form of constipation is generally located in the intermediate or distal colon. In such cases the collection of fæcal matter in the proximal colon is secondary. The general symptoms in this form of constipation are due to the absorption of toxic products from the fæces in the proximal colon, so that the general condition is very much improved by the resection of the proximal colon. The constipation itself is not necessarily cured in all cases. The fact that the fæces enter the distal colon in a fluid form after the operation

tends to reduce the spasm. This form of constipation may also be due to mechanical causes, such as abnormal course of the parietal peritoneum or to stretching of the serosa as the proximal colon increases in size, and pericolicitis. These disturbances are secondary results of constipation but they also increase it, thus forming a vicious circle. Most cases of collection of fæces in the proximal colon, however, do not belong to these forms. They are due to a disproportion between the proximal and the intermediate and distal colon. In two cases that came to autopsy the author found a relative hypertrophy of the proximal and an atrophy of the intermediate and distal colon, showing that the true seat of the constipation was not the proximal, but the intermediate or distal colon. However, it is the proximal colon that gives rise to the symptoms resulting from the constipation, and these symptoms cease when the proximal colon is removed, even though the true cause of the constipation is not removed. Whether the constipation is cured depends on the degree of insufficiency of the intermediate and distal colon.

In another class of cases the colon simply does not have any reserve strength, so that when it has to work under favorable conditions such as movable cæcum, adhesions, or inflammation, it easily becomes exhausted. In such cases it is generally sufficient to remove the unfavorable condition by cæcopexy, by loosening the adhesions, etc., but as it is difficult to make a diagnosis of the degree of insufficiency it is often preferable in these cases also to resect the proximal colon. He describes two typical cases, however, which were cured by minor measures, one by cæcopexy and the other by cæcopexy and appendectomy.

A. Goss.

Sweringen, B. Van: A Rare Congenital Abnormality of the Sigmoid. *Tr. Am. Ass. Obst. & Gynec.*, Pittsburgh, 1915, Sept.

This congenital anomaly was found during an operation for pelvic inflammation. During the enucleation of the inflammatory mass on the left side a cylindrical tube about six inches long and an inch in diameter was uncovered which connected the sigmoid and rectum. The main channel of the gut was thought to be below this small tube which was therefore ligated at its rectal and sigmoid attachments and removed. As it was found that the rectum and sigmoid could not be filled with water through a tube introduced through the anus, an anastomosis between them was necessary.

The pathologist's report showed the tube to be a large gut of very small caliber and not normal sigmoid compressed by the inflammatory mass in the pelvis.

Haines, W. D.: Some Features in the Management of Surgical Disorders of Digestion. *Tr. Miss. Valley M. Ass.*, Lexington, 1915, Oct.

Haines stated that his experience had demonstrated that seven-tenths of the patients suffering

from digestive disorders could be cured by the removal of some extragastric lesion.

Until quite recently dyspepsia has been viewed through a gimlet hole, which, although giving a comprehensive view of the stomach itself, left the larger problems, causative factors, and the interdependence of functionally related organs almost without consideration.

Multiple erosions, ulceration of the mucosa and muscularis, together with perforation of the entire stomach wall, have been produced experimentally in guinea pigs, rabbits, and dogs, by intravenous injection of certain strains of streptococci; singularly enough the strains of streptococci with which experiments have been most successful in the production of stomach lesions have been of a relatively low degree of virulence.

The contentions of this newer pathology are in substance that the organisms of an infection occurring, say, in the buccal cavity of a patient, may be transmitted by the lymph or blood stream to remote parts of the body and form new foci when arrested in the terminal vessels of such organs as the gall-bladder, stomach, duodenum, brain, or kidney. The interval of time between primary infection and the onset of symptoms produced by the metastatic focus may be so great that the patient cannot recollect his tonsillitis or other infection and thus the connecting link between cause and effect is wanting, and delay in such instances is due to an incomplete immunization in which the patient was almost able to work out his own salvation; but Nature's defeat in such instances is not a complete rout, the terms of compromise finding expression in a modified organism, shorn of much of its primordial force, but still retaining sufficient virulence to establish a subfocus when transmitted to some field possessing terminal arteries.

A number of years ago the author and his assistant noted the great difference in the post-operative histories in favor of those cases wherein they drained the gall-bladder in conjunction with the operative work upon the stomach; so great was the difference that they made it a rule to drain the gall-bladder whenever practical in dealing with stomach lesions. While more or less empirical, the practice was based upon the idea of the interdependence of organs, and their success encouraged the author to report the work before the Surgical Section of the Ohio State Medical Association eight years ago.

In view of the newer concepts of the pathology of digestive disorders, an infected gall-bladder or appendix is regarded as the subfocal source from which arises the morbid process designated as gastric ulcer. If this teaching holds, and it is perfectly rational, we must regard gastric and duodenal ulcer in the same light that we have long considered gall-stones, that is to say, not as a disease but as the end-result of a disease, and in order to cope with the symptoms successfully, the original and subfocal causes of the infection must be removed.

It is not uncommon to witness the beneficial re-

sults to the dyspeptic following removal of a small, contracted thick gall-bladder, and many physicians have had the humiliating experience of seeing the tide turned in a patient's health by a confrère who has removed a strawberry gall-bladder or a chronically inflamed appendix after a technically perfect gastrojejunostomy had failed to remove the symptoms.

Fifteen years ago the anterior cervical glands were resected for secondary infection quite frequently, and the profession soon learned that to remove the infected tonsils at the same time brought infinitely better end-results. The surgeon is doing less and less of this type of work for the reason that the laryngologist is removing the infected tonsils before the local process breaks down the systemic resistance and permits invasion of the lymphatics draining the tonsillar region, and this is the lesson the author wishes to drive home in connection with the management of digestive disorders. The profession must be brought to a full realization of the dangers of permitting pus to remain in the system unchallenged.

In speaking of the technique of operation for indurated ulcer Haines said in part as follows:

Gastric motility and the secretory functions of the stomach are, as a general rule, not so seriously disturbed in patients suffering from duodenal ulcer, and very satisfactory results are obtained by turning in the margins of the ulcer and reinforcing the wall by two tiers of seromuscular sutures in conjunction with a gastrojejunostomy.

Conversely this procedure will not relieve the digestive disturbances accompanying gastric ulcer which has perforated, if there is any considerable amount of induration about the base of the ulcer, and this is the only type of ulcer which the author has encountered where perforation has occurred.

In dealing with perforation in this type of ulcer he has made a practice of resecting the ulcer site well beyond the diseased margins and, after closing by suture, doing a gastro-jejunostomy at the same sitting if the patient's condition would permit. End-results, however, have not been satisfactory in a number of the patients thus operated upon and a certain percentage of these patients have required a second operation, such as drainage or removal of a diseased gall-bladder, before obtaining satisfactory relief from their symptoms.

Impaired motility and faulty secretory function on the part of the stomach, which persist in some degree after resection of the ulcer, have led some surgeons to make the so-called "sleeve resection" of the stomach wall in dealing with chronic indurated ulcer. After making an end-to-end anastomosis of the stumps of the stomach wall, the operation is completed by making an anastomosis with the jejunum either at the site of the lower angle of the resection incision or with the proximal stump of the stomach. This operation is said to interfere but little with stomach motility and in consequence is followed by infinitely better end-results. He states

he has had no personal experience with this type of operation but will in the future adopt the procedure in dealing with the large indurated ulcer for two reasons:

First, the results have been unsatisfactory.

Second, competent men give assurance that the "sleeve resection" is followed by uniformly good results.

Numerous case histories from the author's practice were cited to illustrate the various points in the pathology and operative technique in the management of digestive disorders.

Dickinson, G. K.: Gas-Pains. *Tr. Am. Ass. Obst. & Gynec.*, Pittsburgh, 1915, Sept.

The author explains the physiological relationship between "gas-pains," tympany, and pseudo-ileus. The rude operations and anesthesias of thirty years ago traumatized sufficiently to produce a protracted paresis of the gut and a condition and symptoms known as pseudo-ileus. When the operations and anesthesias became simpler, less disturbing to the viscera and less toxic to the patient, the reaction became milder and we had tympany and less true pseudo-ileus. The surgery of today being more carefully and scientifically conducted and the anesthesias given with better pharmacological knowledge the viscera are but slightly disturbed, the patient suffering from what he calls "gas-pains."

During the stage of evolution, both physiological and pharmacological conditions were studied to explain symptoms. The ballooning of the gut under exposure, subsequent kink, regional stasis, absorption, vascularized edema of the wall, transudation of carbonic acid, acapnia, reflex conditions, chromatolysis, and block of Auerbach's plexus are all factors, and should be considered.

Mild cases recover without treatment, or, perhaps are aided in recovery by the use of eserine, pituitrin, and other drugs. But physiological restitution can be obtained more properly through the double-current proctoclysis, water at a temperature of 120°, kept up for twenty or thirty minutes, thereby stimulating the circulation of the engorged intestinal wall with return of normal peristalsis, stimulating through its effect upon the vasomotor system the kidneys, skin, and heart.

LIVER, PANCREAS, AND SPLEEN

Lichty, J. A., and Zurhorst, E. W.: Concerning End-Results of Gall-Bladder and Duct Diseases. *J. Am. M. Ass.*, 1915, lxxv, 482.

An interesting discussion is given of gall-bladder and gall-duct disease based upon cases the author has observed in private and hospital practice during the last twenty years. The article comprises three tables in which the 614 cases of gall-bladder and gall-duct diseases are classified as follows: (1) gall-bladder and duct cases—operative—193 cases; (2) gall-bladder and duct cases—not operated; (3) age incidence in gall-stones.

Of the operated cases 11 died within one month, 6 of them being common duct cases out of a total of 16 common-duct cases operated upon as compared to 121 gall-bladder cases.

The mortality from the medically treated cases of gall-bladder disease was no greater than the operative mortality, but the authors call attention to the fact that the operated cases were not selected cases in any sense, many of them consenting to operation only after years of suffering from the disease, and the extent of the pathological condition found at operation was directly proportionate to the duration of symptoms. They explain the unwillingness of patients to undergo the advised operation to the fact that when they are suffering most, i.e., during an attack of colic, and are most willing to undergo anything which will offer relief, the physician and the surgeon must both advise that the operation be postponed. When the attack is over and the most desirable time for operation is at hand, the patient has such a feeling of well-being that no amount of pressure can convince him of the necessity of an operation to prevent serious complications. In studying the average age of gall-stone patients at onset and at operation, it was found that seven years usually elapsed between the two in women, and eight in men.

Other interesting points brought out are that of 122 cases of gall-stone disease, only 21 gave a history of typhoid; of 54 cases of cholecystitis, 20 gave a history of typhoid. Of the 614 total cases, glycosuria existed in only one per cent. This was only one-tenth of one per cent higher than the incidence of diabetes mellitus among 14,000 patients. Among those cases in which the gastric secretion was studied, 73 per cent of 82 gall-stone cases and 70 per cent of 36 cholecystitis cases had hyperchlorhydria.

In conclusion, the authors emphasize the facts that operation before gall-stone disease becomes common duct-stone is by far the safest procedure; that non-operative or so-called "medical treatment" has a mortality scarcely higher than the operative; but that reduction of mortality should not be our only aim, as many of the non-operated cases lead a miserable existence, many are drug habitues, and quackery is particularly attractive to the gall-stone sufferer.

E. FISCHER.

Krumbhaar, E. H.: A Classification and Analysis of Clinical Types of Splenomegaly Accompanied by Anæmia. *Am. J. M. Sc.*, 1915, cl, 227.

Chronic splenomegaly, usually with anæmia, may occur in adults or in children. Two broad classes are observed: (1) splenomegaly with leucocytosis (leukæmia, pseudoleukæmia, secondary to obstruction, infection, heart-lesions, typhoid, kala-azar, syphilis, etc.); (2) splenomegaly with anæmia, but without leucocytosis. The types of this latter class are the ones which the author discusses especially and attempts to classify.

The term "splenic anæmia," though good in its

early day is now, the author believes, too broadly and loosely applied, and possibly should be dropped for a more specific designation of the distinct types. Those more minutely described and differentiated in the paper are: Banti's disease (splenomegaly with hepatic cirrhosis), Gaucher's disease (large celled splenomegaly), von Jaksch's disease (pseudo-leukæmia infantum), Hayem-Widal's acquired form of hæmolytic jaundice, Chauffard-Minkowski's congenital or hereditary form of hæmolytic jaundice, and pernicious anæmia. Krumbhaar presents a table setting forth in concise form the chief differential points of these types of the disease. The paper is exhaustive and the demarkations of the types are minutely presented. It should be read in its entirety.

As to pathogenesis two views are held: The primary lesion is in the blood, a dystrophy of the red cells; or, primarily or indirectly, the spleen exhibits an exaggerated hæmolytic activity. Widal and his school advocate the former theory, while Banti and others regard the supposed hæmolytic powers of the spleen as the cause of the disease. As a remedial measure splenectomy has afforded the best results when there is evidence of increased blood obstruction, though all such measures should be approached most conservatively, so long as so much of the physiology of the spleen remains unknown.

MATTHEW W. PICKARD.

Paus, N.: Splenic Abscess (Milzabszess). *Deutsche Ztschr. f. Chir.*, 1915, cxxxiii, 386.

Paus describes a case in a woman of 38. She had had an attack of pneumonia the last of October, 1914. There was no crisis, the fever sank by lysis, and after five or six weeks began to rise again, and remained at about 38°C. until the patient was brought to the hospital at the end of December. About the middle of November a tumor had appeared under the left ribs and grew to the size of a child's head. On operation it was found to be a large abscess of the spleen. Pneumococci were demonstrated in the pus. They had infected the heart valves, especially the aortic, during the attack of pneumonia, and a bacterial embolism

had passed through the greater circulation to the spleen and produced the abscess.

Abscesses of the spleen are comparatively rare. Different kinds of bacteria have been demonstrated but the author knows of no other case in which pneumococci were the causative agents. The symptoms vary; the course may be chronic and almost without symptoms, or the disease may manifest itself acutely with chills and fever. Pain and sensitiveness depend on whether the abscess extends to the serosa or not. In this case there was no pain, only a feeling of heaviness. The temperature was not very high. There is generally increase in the number of leucocytes, but the increase was only moderate in this case. Often the left pleura is involved. It was in this case, but that was not surprising as the patient had just had pneumonia of the left lower lobe. Diagnosis is made from the case history and the results of palpation, but it is difficult in most cases. Treatment of course is incision and if necessary splenectomy. The prognosis depends on the promptness of diagnosis and surgical treatment. If they are made early most cases recover, as this one did.

A. Goss.

Gerster, J. C. A.: Ligation of the Splenic and Gastro-Epiploica Sinistra Arteries in the Surgery of the Spleen. *J. Am. M. Ass.*, 1915, lxxv, 527.

In cases of markedly enlarged or adherent spleen where ligation of the pedicle is exceedingly difficult and dangerous the author proposes the ligation of the splenic and gastro-epiploica sinistra arteries as preliminary to, or a substitute for, splenectomy. He proposes to ligate the splenic artery close to its origin from the coeliac axis and the gastro-epiploica sinistra where it reaches the stomach wall from the splenic artery. The points of election for ligation and methods of approach are clearly illustrated and described in the text, and the author strengthens his contention by the citation of a case by Lanz of Amsterdam in which ligation of the splenic artery in a painful, displaced spleen resulted in relief of symptoms and atrophy of the tumor.

E. FISCHER.

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS. CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Oechsner, J. F.: Subacute and Chronic Osteomyelitis. *N. Orl. M. & S. J.*, 1915, lxxviii, 115.

The author advocates radical and extensive removal of necrotic bone in chronic osteomyelitis. While frequent operations on the same case is the rule rather than the exception it is believed that such procedure is unnecessary if the first operation is a thorough one. He does not excise the entire

shaft as advised by Nichols but leaves as much good bone as possible to serve as a framework around which the shaft regenerates. The error is usually in the removal of too little bone.

The process of a localized osteomyelitis varies from that of a small limited cavity containing pus to an extensive involvement of the entire shaft. Unless free drainage is established multiple sinuses and maceration of all soft parts will develop. In most cases the epiphyses escape. The author reports three cases in which one thorough operation was followed by recovery.

W. A. CLARK.

Lotsch, F.: Generalized Ostitis Fibrosa with Tumors and Cysts (Über generalisierte Ostitis fibrosa mit Tumoren und Cysten). *Arch. f. klin. Chir.*, 1915, cvii, 1.

In connection with a case of his own Lotsch takes up an exhaustive discussion of von Recklinghausen's disease of bone. He analyzes the literature, not only of true von Recklinghausen's disease, which is generally distributed, but of the same condition when affecting only one bone. He gives the histories of 37 cases from his own service.

The disease is a systemic affection of the entire skeleton, and he concludes that it is probably due to some toxin circulating in the blood. The nature of this toxin is unknown. There is no proof of direct bacterial infection; in fact, from the evidence this seems extremely improbable. He describes experiments on 26 rabbits which seem to prove conclusively that these bone cysts are never of purely traumatic origin. He concludes that the disease is probably due to a disturbance of the glands of internal secretion, but admits that this brings us no nearer to a solution of the etiology, as both the nature of the changes and their exciting cause is unknown.

A. Goss.

Painter, C. F.: Treatment of the Convalescent Stage of the Infectious and Atrophic Types of Arthritis. *Am. J. Orth. Surg.*, 1915, xiii, 64.

The author states that the synovial membrane is the first tissue of any infected joint to react to the toxic influences, the severity of the infective agent and the resistance as well as the histologic character of the local tissues being modifying factors.

External influences such as trauma, occupational irritation, and heredity are also modifying factors. There is engorgement of the synovial vessels and pouring into the subserous tissues of serum. If the infection is virulent the amount of effusion is large and villous hypertrophy slight, but with mild infection the effusion is slight and the villous proliferation more extensive. There is early a tendency to contracture due to reflex muscular spasm. This is followed in severe infections by erosion and connective-tissue formation which tends to bring about fixed deformity.

In the less virulent infections the deformity is due to the enlarged villi which irritate the joint cavity, causing muscular spasm, and later to mechanical obstruction by the enlarged synovial membrane, preventing full extension of the joint.

These pathological facts being known, a rational line of treatment can be deduced from them. Observing a large number of these cases it has been found that fixed deformities have arisen because the most comfortable positions for the affected joints were sought. Those joints which the patient was compelled to use persistently retained most motion, while others not necessarily used became stiff.

The question as to when to begin motion of such joints without bringing again into activity the causative agent is a difficult one to determine, but the

author thinks that where even a small arc of motion persists, passive motion should be used in an endeavor to increase the range of mobility.

Prolonged fixation of these joints not only causes adhesion between the joint surfaces but also, where the condition is polyarticular, interference with body metabolism which is detrimental to the resistance to infection which the patient needs to acquire. If this line of treatment is adopted early, the need of more severe measures later, either mechanical or operative, may be avoided.

H. W. WILCOX.

Brackett, E. G.: Operative Treatment of Osteo-Arthritis. *Am. J. Orth. Surg.*, 1915, xiii, 46.

The operative field in the treatment of osteo-arthritis is limited to the relief of disabling conditions in partly damaged joints which can do their work to advantage only when freed from their handicap. The operation is to be regarded as a part of the treatment of the general condition which must itself be cured, the operation acting only to free the joint condition, which is in turn to be regarded as a prominent manifestation of the disease. The author discusses operative treatment only. Such treatment is applicable only (1) when the disease is localized (non-articular, traumatic), and (2) when it is the residuum of a process that has been arrested.

A table is given in which these joints are grouped into three divisions: (1) general damaged condition of joints to which operative procedure is applicable; (2) hypertrophy of synovial membrane without bone change—rare; (3) osteo-arthritic joints with overgrowths.

1. Damaged joints working in bad mechanical position are divided into two groups: (1) The first group comprises cases in which the disease is not of long enough duration to destroy the essential structure but is confined to contracture of the soft parts. These are not considered. (2) The second group comprises cases in which the cartilage and bony surfaces are also affected, so that function cannot be restored, although deformity may be reduced without adding to the comfort of the patient. Treatment is by arthrodesis in the position of election.

2. Cases with synovial changes are not considered.

3. In localized overgrowths interfering with normal function, and in general overgrowths with the cartilage more or less destroyed so that function cannot be restored, the treatment consists in changing the function of the joint. Some are distinctly traumatic, while others are parts of a general process of infection without localizing trauma. Operation involves consideration of (1) the nature of the process, (2) involvement of other joints, (3) degree of disability, (4) age, and (5) social elements.

Operation is not to be considered in active or doubtful stages, especially in multiple joint involvement, when occupational and social conditions may be determining factors. Pain may be the symptom that will be decisive in many cases.

Localized hypertrophic growths in joints not permanently damaged cause trouble rather by their position than their extent, the interference with function being mechanical or causing pain, as seen in younger patients with traumatic history. The joint is usually well preserved, and operative interference to remove the offending overgrowth is justified, although there is danger of increasing the irritative factors which determine the position of the overgrowth in this particular joint.

Pure osteo-arthritic joints present the following characteristics: extensive overgrowths resulting in overgrowth of the joint, loss or serious impairment of function, with pain on motion absent during rest. In such a case in the hip-joint the head of the femur may be excised in the hope of obtaining useful motion, or complete arthrodesis may be done to obtain a stable joint in standing. If motion is sought, only about 30° need be obtained; more than this causes irritation with consequent bony change which influences the final result unfavorably. Arthrodesis, on the other hand, is final and obviates the danger of late changes complicating the result.

In deciding upon the operation in a given case one must consider: (1) the occupation and social position of the patient; (2) whether sitting or standing at work must have greater consideration; (3) whether the necessary restrictive after-care can be given in case the less radical operation for retention of motion is decided upon.

C. E. WELLS.

Keller, H., and Moravek, A. J.: The Clinical Value of the Complement-Fixation Test in Surgical Tuberculosis. *Internat. J. Surg.*, 1915, xxviii, 252.

Different methods of tubercular invasion are mentioned. The invasion may be by direct access to the system, followed by the regular symptoms of the cocci group. In this disguised form differential diagnosis must be absolute to result in relief.

The theory of the complement-fixation test is that where antigens are in contact with an inactivated serum containing specific antibodies, plus normal serum as a complement, the complement is taken up and is evidenced by the fact that after standing sufficiently long, red blood corpuscles which have previously absorbed hæmolytic amboceptors cannot be brought into solution with this combination.

The test is designed to detect the different proteids and bacterial products in the serum of a tubercular patient. The necessary apparatus consists of test-tubes 10 mm. in diameter and pipettes 0.01 ccm. and 0.1 ccm., all sterilized; a 0.90 per cent sterile salt solution; the serum of a patient which has been inactivated; freshly prepared guinea-pig serum; a 5 per cent suspension in 0.90 per cent salt solution of red ox-blood cells; a clear solution of antigen which produces the antibody to be tested, prepared from tuberculosis culture or tissue.

The simplified method of making the test is as follows: Six sterile test-tubes are used. In the first two is placed 1 drop of the patient's serum,

in each of the next two tubes (controls) is placed 1 drop of serum from a patient known to be tubercular, and in each of the next two (also as controls) 1 drop of serum from a perfectly healthy person; 0.5 ccm. of guinea-pig serum is added to each test tube as a complement. Into only one of each of the three pairs is put 0.5 of the antigen.

Shake well and incubate at 37°C for one hour, add the amboceptor and shake and keep at 37°C for two hours. Remove from the water bath and keep in room temperature for 12 hours, then read.

The specific value is shown in the following conclusions:

1. In surgical tuberculosis before there is an appreciable lesion, the results are usually negative.
2. There is a positive reaction in cases of appreciable lesions with a lack of signs and symptoms pathognomic of the disease.
3. The reaction is positive in about 76 per cent of active cases.
4. The test is negative in cases having old healed out lesions.
5. It is more delicate than the Wassermann test.
6. The test differentiates between the human and bovine types. Many cases are cited showing the benefits of early diagnosis and treatment.

H. W. MALTBY.

Erlacher, P.: Direct and Muscular Neurotization of Paralyzed Muscles. *Am. J. Orth. Surg.*, 1915, xiii, 22.

The author has presented a most striking and interesting paper which must be read in order to be appreciated. In a series of operations on monkeys and guinea pigs he shows that it is possible to transplant a motor nerve directly into muscular tissue and get functional results at the end of six weeks, and that it is not necessary to use the prescribed nerve-tracks, but a muscle can be successfully supplied by sewing a motor nerve directly into it at any point, and that the nerve will produce a system of motor end-plates that will respond to electric stimulation.

In the second series he shows that he can produce muscular neurotization in three ways: (1) by removing the connective-tissue sheath from two parallel muscles and sewing them together; (2) by making a long centrally pedunculated flap from a healthy muscle, freshened widely, and grafting into the paralyzed muscle; (3) by cutting a whole muscle at its tendinous insertion and either stitching it to a well freshened paralyzed muscle or making an end-to-end connection with the paralyzed muscle.

He reports three clinical experiences: (1) one in which he inserted a flap from the peroneus longus and extensor hallucis into a paralyzed tibialis anticus in a case of paralytic flat-foot; (2) a case of paralysis of the biceps in which he sewed a widely freshened lateral portion of the triceps into the belly of the biceps; and (3) one in which he implanted a widely freshened flap of the trapezius into a paralyzed deltoid.

All cases have been too recent to report final results, but from his experiences the author feels justified in recommending the operation of muscular neurotization in suitable cases. J. O. WALLACE.

Murphy, D. J.: A Contribution to the Study of Progressive Muscular Atrophy; a Report of Four Cases with Mental Disorders. *Alien. & Neurol.*, 1915, xxxvi, 215.

The author calls attention to the obscurity of the etiology of this disease. It is sometimes a sequel to typhoid fever, diphtheria, scarlet fever, and syphilis. The atrophy usually begins in the smaller muscles of the hand, followed by fibrillar twitchings, diminished reflexes, and finally, electrical reaction of degeneration occurs. Mental symptoms are not common and when present they are in that form which presents bulbar symptoms.

In the first case, that of a man, aged 75, whose family history was negative, his arms began to atrophy at about 30, starting as a weakness in the right hand. At about 50 his legs began to grow weak. He has not walked for five years, and cannot move either arm. All muscles of the upper arms are completely atrophied, nothing but skin and subcutaneous tissue remaining over the humerus. His legs have slight power but there are no reflexes. The Wassermann test was negative, but he gives a history of having had syphilis about ten years before his physical weakness began, and he now shows an Argyll-Robertson pupil and positive Romberg sign. His mental condition is characterized by delusions of grandeur and persecution and to a slight extent by auditory hallucinations. His memory and general intelligence are good, but he has no idea of his condition and believes himself able to leave the hospital and go to work.

The second case was that of a man, aged 60, whose family history was negative. Weakness in the right shoulder began at 32. He is now unable to use his arms and all muscles of the upper extremities have atrophied. Mentally he suffers from delusions of people trying to kill him. Auditory and visual hallucinations are prominent. His general intelligence and knowledge of current events are good, but he does not realize the condition he is in. The Wassermann test was negative, but he gives a history of an eruption on his face and chest and of his hair coming out.

The third case, a man, aged 35, was troubled with muscular weakness and atrophy of the scapular, intercostal, neck, and arm muscles. He died after being in the hospital a few months. He showed beginning dementia and loss of memory. Autopsy showed a small hard spinal cord with evidence of bulbar disease. The Wassermann test was negative, but he gave a history of a hard and soft chancre when eighteen years of age.

The fourth case, a man, aged 58, was an alcoholic. The Wassermann test was positive. He had atrophy of the arm muscles beginning ten years ago and recently loss of speech. He was completely

disoriented and was leading a vegetative existence. This case seems to be one of general paresis associated with muscular atrophy. W. A. CLARK.

Morian, R.: Injury of the Crucial Ligaments (Beitrag zur Kreuzbänderverletzung). *Deutsche Ztschr., f. Chir.*, 1915, cxxxiii, 579.

Morian observed 5 cases of injury of the crucial ligaments, 2 of which came for treatment soon after the injury, the others after the lapse of some months. Röntgen examination is important in the diagnosis showing at the site of the crucial ligaments small fragments of bone broken off from the spinous process of the tibia or from a condyle of the femur. Of the 3 old cases, 2 showed symptoms of joint-mice. Among 3 cases treated operatively, a freely movable piece of bone was removed from one. In the röntgen picture it looked as though it came from the spinous process of the tibia, but in reality it came from the external condyle. In the 2 other cases there were bits of bone and cartilage which were still attached to the ruptured ligaments. In all the cases disturbance of motion, generally slight, pain in the joint, and weakness of the muscles persisted after treatment. In one case arthritis deformans followed. A. Goss.

FRACTURES AND DISLOCATIONS

Watson, J. H.: The Operative Treatment of Certain Fractures of the Lower Extremities in Children. *Clin. J.*, 1915, xlv, 257.

Until 1914 the author had used conservative methods in the treatment of fractures of the long bones in the lower extremity in children, using various methods of retention with more or less variable results. Since 1914, he has adopted Lane's technique, and the results, especially in the cases of oblique and spiral fractures, with which he deals more particularly, have been more gratifying. These fractures are not only difficult to reduce because of the frequent interposition of soft parts or splinters of bone, but they are difficult to retain in apposition after reduction.

Moreover, the laceration of the periosteum frequently leads to excessive production of callus, which increases the deformity. The weight-bearing axis of the limb is often more or less deflected, with resulting static disability and joint changes. These difficulties are entirely overcome by accurate anatomical apposition, which in turn is possible only by open operation. He believes with Lane that the patients are more comfortable as soon as the reaction following the operation is over, and that if the plates are applied properly better function results. He refers to the findings of the committee appointed by the British Medical Association to consider the question of treatment of fractures from which he quotes as follows: (1) The best way to obtain a good functional result is to secure an anatomical replacement, but it is true that a useful limb may be obtained with an indifferent anatomical

correction. (2) In practically all age-groups, operative cases show a higher percentage of good results than the non-operative cases.

No method, operative or non-operative, which does not promise good anatomical results should be accepted as the method of choice. They found 90 per cent of "good functional results" in 1,016 cases treated conservatively, and 93 per cent of "satisfactory results" in 64 cases treated by operation. In the author's experience the difference in favor of operation is much greater.

The indications are: (1) certain spiral or oblique fractures of the femur; (2) fractures with interposed soft parts; (3) certain oblique fractures of both bones of the leg; (4) certain fractures near the knee- and ankle-joints.

He subscribes to the advantages of the operative treatment as given by Lane: (1) immediate relief from pain produced by movement of fragments; (2) relief from tension and discomfort of extensive extravasation of blood; (3) early restoration of function; (4) restoration of original mechanics.

He gives as absolute contra-indications: "An indifferent surgeon who cannot keep his fingers out of the wound, and who has not a thorough grasp of the anatomy of the part, untrained assistants, unsuitable environment, and incomplete equipment."

Lane's technique is carefully described and followed to the letter. Special emphasis is laid upon absolute immobilization immediately after operation.

F. J. GAENSLEN.

Dyas, F. G.: Treatment of Fractures by Autogenous Bone Transplants. *Surg., Gynec. & Obst.*, 1915, xxi, 115.

Foreign bodies are rapidly being superseded by absorbable substances in the repair of wounds. Foreign bodies as formerly used devitalized the tissues and predisposed to infection. Lane's instrumental technique was necessitated by a lack of resistance in the tissues caused by the introduction of the steel plate and screws.

The case histories submitted by the author, together with the operative technique, illustrate a simple method of autogenous bone transplant. The inlay method of Albee and the methods of fixation by wire, pegs, and screws are also discussed. Foreign bodies for the fixation of most fragments are unnecessary and predisposed to infection, frequently requiring removal. Autogenous transplants will frequently bring about union when other methods have failed. When foreign bodies are not used in the repair of fractures the tissues may be handled with the same degree of security as in a laparotomy.

Albee, F. H.: The Bone-Graft Wedge in the Treatment of Habitual Dislocation of the Patella. *Med. Rec.*, 1915, lxxxviii, 257.

A description is given of the usual outward dislocation of the patella and its anatomy, and a re-

view of some of the more important methods of operating for its prevention, including the plicating and muscle transplanting operations.

The author describes his own method which consists essentially of a semilunar skin incision on the outer side of the patella from the tibia tubercle to the top of the external condyle. The external condyle is then incised with a broad, thin osteotome on its external surface, making a bone incision from one and one-half to two inches long and about one-half to three-quarters inches behind the anterior articulating surface. The anterior surface of the external condyle is then forced forward by a greenstick fracture near the internal condylar groove. This forward displacement is made sufficient to permanently block the outward displacement of the patella. A bone-graft is then removed from the tibia through the lower end of the same incision and fitted into the slot in the condyle as a wedge. This is held in place by bone-dowels. The ligaments and tendinous expansions are sutured over the graft with kangaroo tendon and the skin closed with continuous catgut suture without drainage. The author claims as advantages of the operation, lack of damage to the joint cartilage and permanent blocking of the displacement of the patella.

C. KIDNER.

SURGERY OF THE BONES, JOINTS, ETC.

Burk, W.: Transplantation of Fascia to Replace Intermuscular Fascia Sheaths (Ersatz intermuskulärer Fasienscheiden durch frei transplantierte Fascie). *Zentralbl. f. Chir.*, 1915, xlii, 573.

Interference with motion in the extremities after gunshot wounds is not always due to fractures or injuries of the nerve or joint; it is frequently of muscular origin. The sheaths of the muscles become adherent to the muscle or the surrounding tissues, so that the muscle cannot contract. Sometimes it is the perimysium of the individual muscle that is affected. Burk describes a case in which the muscles of the hand were thus affected. He excised the muscle sheaths that were affected and replaced them with fascia lata. He inserted the bits of fascia as deeply as possible between the muscle bundles and fastened them to the muscle or the periosteum of the neighboring bone with catgut sutures. The skin wound was covered with Thiersch grafts. The transplanted fascia became incorporated with the underlying fascia and motion was restored.

A. Goss.

ORTHOPEDICS IN GENERAL

Ober, F. R.: An Operation for Congenital Equinovarus Deformity; Preliminary Report. *J. Am. M. Ass.*, 1915, lxxv, 621.

The author describes a new operation which allows for the division of all the soft parts whose contraction causes equinovarus and inversion.

A fishhook incision about three inches in length

is made about the internal malleolus. The incision begins one and one-half inches above the malleolus and half way between the posterior border of the tibia and the Achilles tendon and sweeps around the lower end of the malleolus and then upward and forward. The anterior flap is dissected well forward, exposing the deep fascia over the malleolus and the annular and deltoid ligaments. A semilunar incision is then made curving upward three-quarters of an inch above the tip of the internal malleolus through all the structures to the bone, avoiding the posterior tibial tendon. This flap is dissected downward off the bone, exposing the tibiotarsal articulation. The superior calcaneo-scapoid ligament is divided transversely by means of a tenotome. The deltoid and inferior calcaneo-scapoid ligaments are incised. These are dissected off the sustentaculum tali and well down on the os calcis. The posterior tibial tendon, and the Achilles and plantar fascia are cut if necessary. The foot can then be placed in an overcorrected position and the astragalus and scaphoid rotated into normal position. When the foot is overcorrected the deltoid ligament is sutured low down on the malleolus.

F. C. KIDNER.

Meyer, A. W.: Anatomical Specimens of Unusual Clinical Interest. *Am. J. Orth. Surg.*, 1915, xiii, 86.

The author describes three specimens of coracoclavicular articulations, the first showing a large bony outgrowth joined to the scapula above the suprascapular notch, converting that into a canal 13 mm. long. A smaller mass was attached to the larger by fibrous union. The author believes that the larger mass was formed by the fractured, displaced, and reunited distal end of the clavicle.

The other two cases showed slight evidence of arthritis at the sternoclavicular end, and one had an exostosis at the coraco-acromial junction, which confirms a previous observation of the author that arthritis seems to favor the development of exostoses on the shafts of bones near affected joints.

There are also described five instances of destruction of the tendon of the long head of the biceps, together with a sixth specimen in which the destructive changes were apparently arrested early. In these

specimens that portion of the long head of the biceps lying between the humeral tuberosities and the supraglenoid tubercle are completely destroyed. The superior and anterior portions of the capsule were also partly destroyed, the intertubercular sulcus was absent, and the cartilage both of the upper portion of the head of the humerus and of part of the glenoid fossa was absent.

The under surface of the acromion and the upper surface of the humeral head were eroded and polished.

As these specimens were discovered in the course of anatomical dissection, no attempt to diagnose the diseased condition was made, except to suggest that it was of the nature of an "arthritis deformans."

H. W. WILCOX.

Freiberg, A. H.: Tendon Transplantation in Infantile Paralysis. *Tr. Miss. Valley M. Ass.*, Lexington, 1915, Oct.

Operations for infantile paralysis have in the past been too complicated, or have been so planned as to violate the laws of muscle mechanics. The author finds himself in accord with Stoffel in determining this:

1. The transplant must bear a fairly close morphological and functional relationship to the muscle whose function it is to supplant.

2. In order to possess effective contractility the transplant must be fastened to its new point of insertion under physiological tension only.

3. The transplanted muscle must not be used to hold the limb in a corrected position.

In consequence of simplifying the operations much more may be expected in functional efficiency and uniformity of results.

Emphasis is laid upon the advisability of constructing plans for operations only after the paralyzed muscles have had adequate mechanical support and local therapy. Most patients come for operation without this. Electric treatment is condemned because it has not been proved to be of real therapeutic value, and because harm results from its being used as a substitute for measures which are purposeful. If the local condition of the muscles is not thoroughly understood, unnecessary and unsuitable operations are likely to be done.

SURGERY OF THE SPINAL COLUMN AND CORD

Willien, W. T.: Report and Clinical Demonstration of a Case of Fracture of Twelfth Dorsal and First Lumbar Vertebrae; Laminectomy and Results. *Lancet-Clin.*, 1915, cxiv, 167.

After being squeezed between a mine car and the side of the mine, causing fracture of the ribs, the patient felt no pain, even from a fractured leg.

Upon examination the temperature was found to be 100°, respiration 22 and labored. There was a slight depression at the twelfth dorsal and first lumbar vertebrae, and curvature of the process

to the right. Reflexes were practically all absent. Sensation from the wrist down was negative. Motion, voluntary and involuntary, absent; there was bladder stasis, and catheterization and enemas were necessary. X-ray confirmed the diagnosis.

The patient's condition made laminectomy inadvisable until 18 days later. Meanwhile the leg was set without pain. The usual operation was performed and the twelfth and first lumbar processes reversed. Lamina of the twelfth and first vertebrae were also removed to release pressure on the cord.

The dura was punctuated by bone spicules, and fluid escaped. The bodies of the twelfth and first lumbar vertebræ were punctured also. All fractured particles were removed; the wound was closed and drainage instituted.

The patient made an uneventful recovery. Chronic cystitis, however, resulted from the use of the catheter. A leather packet was applied, and reflexes restored. The patient can now walk without the aid of a cane or crutch. T. O. BOYD.

Key, E.: Operation for Primary Tumors of the Bodies of the Vertebræ (Über Operationen wegen primärer Wirbelkörpergeschwülste). *Nord. med. Ark.*, Stockholm, 1914, xlvii, No. 16.

The author reports a case in which he operated for a tumor of the body of the eleventh thoracic vertebra. He also collects the cases from the literature amounting in all, including his own, to 9. In one case the tumor originated in a cervical vertebra, in 6 cases from a thoracic and in 2 from a lumbar vertebra. Four cases were enchondromata. The other cases were spindle-celled sarcoma, giant-

celled sarcoma, chondrosarcoma, chondro-osteomyxosarcoma, and chondro-myxosarcoma.

In the author's case a part of the tumor could be palpated from outside, and there were disturbances of sensation, but no symptoms pointing to compression of the spinal cord. Röntgen examination showed a growth of the eleventh thoracic vertebra. Exploratory puncture in the eleventh intercostal space disclosed myxomatous tissue. He succeeded in removing the tumor by operation, but the patient died on the fourth day.

The results of operation are not good. Three cases, those of Krause, Garré, and Key, succumbed to the operation; one patient, Kümmell's, died one and one half or two years after the operation from a recurrence. One of Madelung's cases died ten years after the operation from recurrence. In this case the operation was not complete. Two patients of Krause and Kümmell are free from recurrence ten and eleven months after operation. Only in one case, that of Israel, was there permanent recovery. Key believes the results may be improved by earlier diagnosis and operation. A. Goss.

SURGERY OF THE NERVOUS SYSTEM

Laborde, S.: Effect of Radium on a Fibrous Cicatricial Band Accompanied by Neuritis of the Median (Action du radium pur sur une bride fibreuse cicatricielle, accompagnée d'une névrite du médian). *Bull. et mém. Soc. de chir. de Par.*, 1915, xli, 1487.

Laborde describes a case of an army officer who, in consequence of a wound, had a Y-shaped cicatricial band extending from the elbow to the middle third of the forearm. The forearm was fixed at an angle of 110° with the arm. Moreover, there was neuritis of the median; there were attacks of the most intense pain, worse at night, and it was impossible for him to sleep without taking veronal or morphine. Flexion of the thumb and index-finger was very difficult. He was given radium treatment for a month, 75 mg. of radium bromide being used in two platinum tubes 0.5 mm. thick, covered with rubber 1.5 mm. thick. Four applications were

made; the first three at intervals of six days for a period of an hour and a half, the fourth after an interval of nine days was an hour in length. At the end of the month there was a final application for a period of an hour and a half. At the end of that time extension of the forearm was almost complete, and the fibrous tissue which could be felt at first had disappeared; moreover, the neuritis had improved very markedly; the attacks of pain had stopped, it was much easier to move the fingers, and the electrical reactions were almost normal.

Laborde recommends radium treatment for fibrous cicatricial bands and for cases of neuritis that seem to be due to pressure by scar tissue. Care should be taken in making the applications near a nerve, on account of the action of radium on nerve tissue that is undergoing repair; hence the limitation of the treatments in this case. Watch should be kept over the electrical reactions. A. Goss.

SURGERY OF THE SKIN, FASCIA, AND APPENDAGES

Schede: Open Treatment of Wounds (Über offene Wundbehandlung). *Deutsche Ztschr. f. Chir.*, 1915, cxxxiii, 617.

The author previously published an article on this method of treating wounds, which aroused active discussion and considerable criticism. In this article he upholds his views, which he has never claimed were particularly new. He points out on the one hand the undoubted lack of any effective method of dressing granulating and actively secret-

ing wounds, and on the other hand the agreeableness of the open treatment to the patient. He emphasizes the advantages of the treatment and recommends its general adoption.

To the general discussion of the usefulness of the method are added short descriptions of the technique of applying the treatment, with illustrations showing how patients with wounds of different parts of the body, especially of the extremities, should be so placed that the secretion from the

wounds may be discharged freely into a vessel placed beneath them. This is accomplished by means of fenestrated plaster casts with iron rods for holding the limb elevated, plaster beds, etc. When the patient is in the proper position in bed, wire bridges are placed over the injured part of the

body, so that the attendants do not need to manipulate or move it. The patients are very glad to be relieved from the necessity for constant redressing, and even when the physician examines the wound he does nothing but cleanse it with the simplest means possible, often using the hot-air douche. A. Goss.

MISCELLANEOUS

CLINICAL ENTITIES — TUMORS, ULCERS, ABSCESSSES, ETC.

Herrick, J. B.: Certain Medical Aspects of Recurrent Malignant Tumors. *Am. J. Med. Sc.*, 1915, cl, 25.

Recurrences of malignant tumors are often difficult of diagnosis. Four things are likely to stand in the way of early and easy recognition of these recurrences: (1) There may be no recidivation at the site of the operation. (2) No tumor mass may be made out in other parts of the body. (3) A long time may have elapsed since the operation, during which time the patient has apparently been healthy. (4) The symptoms are often not those commonly associated with tumor.

Bone metastases are common, especially from malignant disease of the adrenal, breast, thyroid, and prostate. Symptoms referable to the respiratory tract should arouse suspicion of metastases of the chest. The lung may be completely riddled with small tumor nodules. Pleural effusion is a common metastatic phenomenon. J. H. SKILES.

Cope, V. Z.: A Clinical Study of Actinomycosis, with Illustrative Cases. *Brit. J. Surg.*, 1915, iii, 55.

Cope's definition of actinomycosis is that of a chronic inflammation consequent on infection with a form of streptothrix which at some time or other in its evolution in the tissue leads to the formation of characteristic small granules composed of the fungus. He believes that the disease is much more common than English teaching allows and that many cases are missed for want of sufficient investigation, or even because the very possibility of certain lesions being actinomycotic was not considered. He believes the fungus is parasitic on, or has close connection with, certain cereals and grasses, and holds it unlikely that human beings are often infected directly from cattle or that infection may be conveyed by tainted meat. The skin is not commonly affected primarily, so that for practical consideration there remain as paths of ingress of the fungus into the body, the alimentary and respiratory passages. Infections in the region of the mouth are more numerous than all other cases put together. He believes there is an intimate relationship between carious teeth and the disease.

Cope also supports Poncet's view that the thorax is frequently infected by way of the œsophagus. Infection from the stomach and small intestine is

almost unknown. The respiratory passages also provide an occasional path of entry, by means of spores or minute portions of mycelium floating in the inspired air. The streptothrix's best growth is seen in the connective tissue, the process extending nearly always by continuity in this tissue, seldom by the blood stream, and seldom by the lymphatic system. Primary bone infection is seen only in the jaws; but sooner or later the skin is involved. The lymphatic system is immune to attack, while the peritoneum is resistant, as is the pleura. Cases of primary infection of the genito-urinary system are on record, but very rarely. Transmission by blood stream sometimes takes place, and metastatic abscesses have been found in the brain, kidney, etc. The fungus is usually to be found in the softened area of tissue. The pus from every abscess should be examined as a routine practice, and repeatedly if necessary.

The clinical symptoms vary considerably in different parts of the body, but in most cases two stages can be recognized: (1) the stage of induration, and (2) that of softening. Though the process is occasionally acute or subacute at the onset, it is essentially of a chronic nature. The buccopharyngeal region is by far the most common to be infected primarily. The upper jaw is rarely affected. Infection may take place through the tonsils, gums, or carious teeth. Eruption of the wisdom tooth is of especial importance in this connection. There is less swelling on the inside of the cheek or jaw, and it is uncommon for sinuses to open on the interior of the mouth. Pain is slight and often absent in the chronic cases with induration. In the early subacute type which invades the parotid region, pain may be marked. Secondary infection is common. The initial examination of pus may show a preponderance of other bacteria.

From a surgical point of view appendicular and cæcal infection is the variety next in importance to the buccopharyngeal form. The acute form begins with an acute attack of appendicitis, with perforation or gangrene of the appendix. The only atypical condition found will be that the sinus left by the drainage tube shows no tendency to heal up. The chronic form with insidious onset comes under observation as a firm, painless swelling in the right iliac fossa. Another type is that in which the appendix is found upon examination to contain the fungus of actinomycosis.

Two types of thoracic infection are to be noticed.

The first concerns the air-passages and gives rise to symptoms of bronchitis or possibly bronchiectasis in which the sputum may be foetid. The second or perforating type is attended by much infiltration of the connective tissue of the mediastinum, and later of the thoracic wall; at the same time the lung may be extensively invaded by the disease. Fever, anæmia, and wasting are noticeable. Pain may or may not be present; cough and expectoration may not develop until a late stage of the disease. One side of the chest may be infected from the other by continuity of the disease across the front of the vertebral column.

A routine examination of the discharge from all chronic abscesses is the best and most certain way of diagnosing the condition early. In cases where there is no discharge it may be suggested that the removal of a small portion of tissue for microscopical examination would elucidate the diagnosis. The agglutination reaction has not been utilized to any extent in the diagnosis of actinomycosis, but may occasionally be of some value if there is a very suggestive clinical picture, but if the pathological examination be negative the clinical diagnosis can be maintained until further or repeated examinations finally prove or disprove the diagnosis. Actinomycosis in the soft type nearly resembles septic syphilitic or tuberculous inflammation; in the indurative form it more often resembles a neoplasm. Cope gives clearly the diagnostic features in special parts, such as in the region of the lower jaw and face, the cæcal region, and the thorax.

Under certain conditions and in certain parts of the body, actinomycosis tends to recover naturally. Treatment yields the best results in the region of the face and neck. Affection in the lung and cæcal region gives a poor prognosis. The method of treatment is as follows: (1) constitutional measures; (2) medicinal drugs, especially potassium iodide and other iodine preparations; (3) antiseptics applied locally; (4) vaccine therapy; (5) surgical operation; (6) radiotherapy, X-rays, and radium.

In conclusion brief reports are given of 3 illustrative cases seen by the author. All improved or were benefited by treatment except a chronic case of the ileocæcal type, and two cases of actinomycosis of the thorax.

EMIL C. ROBITSHEK.

Tuder, T. J.: The Modern Treatment of Burns.
Internat. J. Surg., 1915, xxviii, 282.

The author quotes Pabst, coroner of Brooklyn, who claims that at least 90 per cent of burns are the result of carelessness. Pabst recommends the fireproofing of clothing which is to be employed for pageants, carnivals, receptions where flimsy draperies are used, amateur Christmas displays, etc. This is accomplished by soaking the fabric in an ammonium phosphate solution for five minutes (one pound to one gallon of cold water) and then drying them. Such articles remain fire-proof until washed or drenched with water, after which the process must be repeated.

The first thing that should be done in serious burns is to combat the shock, which is always present, by the use of morphine, atropine, camphorated oil, caffeine, or digitalin. The remainder of the article is devoted to the treatment of burns, which is begun as soon as the patients revive sufficiently. It is well summed up in the conclusions which are as follows:

1. The use of carron oil, even if some antiseptic agent be added, should be abandoned.

2. Ichthyol and boric acid ointments represent the best to be had in this kind of application, but all ointments are objectionable.

3. Picric acid in a saturated aqueous solution, sterile normal saline and sterile solutions of bicarbonate of soda are the best liquid applications for burns.

4. The open-air treatment is to be preferred for burns of all degrees when its proper use is practicable.

5. Scarlet red ointment is a dependable remedy to stimulate epithelial proliferation.

HENRY J. VAN DEN BERG.

Kausch: Gas Phlegmon (Über die Gasphlegmone).
Beitr. z. klin. Chir., 1915, xcvi, 7.

The clinical signs of gas phlegmon vary so widely that the question arises as to whether it is caused by one species of bacteria of varying degrees of virulence, or whether many different kinds of bacteria are responsible. Kausch concludes that the condition is due only to Fränkel's bacillus, and that therefore there is some hope of finding a preventive, analogous to the antitetanus toxin. He describes three classes of cases: (1) a mild form in which the infection is chiefly in the subcutaneous tissue; (2) a severe form, in which it is in the muscle tissue; and (3) a fulminating form, where the subcutaneous tissue and skin are affected and there is a rapidly fatal general infection. In the latter form death generally occurs in from 12 to 48 hours, whatever treatment is given. He describes cases illustrative of the different groups.

Gas phlegmon can be prevented by freely opening up all wounds caused by shells, and those caused by artillery bullets if there is extensive destruction of tissue. If there is any suspicion of gas phlegmon incision should be made at once, without waiting for the diagnosis to be confirmed by emphysema. It is better to incise ten times unnecessarily than to neglect it once when necessary. The tissues have a characteristic appearance, even before the development of gas, which is easily recognized after one has seen a few cases. Multiple incisions about 5 to 8 cm. long are made; sometimes as many as fifty. The incisions should be begun in sound tissue and carried into the infected region, so as to prevent the spread of the infection. The incisions must be deep enough to reach to normal tissue. Amputation should be delayed as long as possible. Limbs should not be amputated because they are cold and pulseless, without incisions first being made. The swelling often causes the pulse to disappear and it

reappears after free incision. Tissues should be excised only when they have already undergone necrosis. If it becomes necessary to amputate, the incision should not be made in sound tissue, but at the line of demarcation, or even sometimes in diseased tissue. It can only do harm to open up healthy lymph-vessels. A. Goss.

Bérard, L.: Late Tetanus (Sur le tétanos tardif). *Bull. de Acad. de méd.*, 1915, lxxiv, 234.

Bérard describes a series of cases of tetanus coming on late after the original infection. They begin gradually; at first there are only slight contractures, which are gradually progressive. All the classical symptoms of tetanus are present, but in mild degree only. One sign which is almost constant is permanent and progressive contracture of the abdominal muscles. It is generally taught that cases which develop late end in recovery, and the ones that have a sudden and stormy onset are fatal. But these cases of which Bérard speaks generally result in death from paralysis of the respiratory muscles and asphyxia. He believes they are in general due to reinfection caused by the awakening of latent spore forms of tetanus through secondary surgical operations.

In order to prevent reinfection a third dose of antitoxin should be given, in addition to the two regular ones, before any surgical intervention is contemplated. The objection might be made that there was danger of anaphylaxis from giving a third dose of the antitoxin, and though this objection would appear to be justified on theoretical grounds Bérard has never known it to occur in practice, and since pursuing this course he has had no further difficulty with these cases. A. Goss.

Pribram, B. O.: Clinical and Therapeutical Experience with Tetanus (Klinische und therapeutische Erfahrungen über den Tetanus). *Berl. klin. Wchnschr.*, 1915, lii, 916.

Pribram gives the case histories of a series of over 40 cases and comes to the following conclusions:

The localization of the spasms is of great importance in prognosis. In cases of lockjaw, opisthotonus, and spasms of peripheral muscle groups the prognosis is relatively good, while in spasm of the glottis and diaphragm it is practically hopeless, even if no other muscles are involved. An early symptom that is a certain precursor of spasm of the diaphragm is epigastric pain. The old rule that the severity of the infection is proportional to the shortness of the incubation period does not always hold good. The true incubation is to be reckoned from the time of the production of toxins by the invading bacteria, and this does not always coincide with the moment of infection. The localization of the spasms is independent of the point of injury and also of the intensity of the infection. The most frequent complication of tetanus is confluent lobular pneumonia and, barring suffocation from spasm of the glottis and diaphragm, it causes the most deaths.

In many tetanus patients and in almost all who die of tetanus there are marked signs of status lymphaticus, which indicates that predisposition plays an important part in the infection. The best treatment of the wound is the radical removal of all necrotic tissue till fresh bleeding tissue is reached; escharotic antiseptics and the cautery do not appear to be particularly effective. The question of amputation should be decided on the usual surgical principles. The severity of the infection is not at all parallel to the severity of the wound. It is not logical to give prophylactic treatment except in cases of severe injury.

Because of the danger of pneumonia ether should never be used as an antiseptic; pure chloroform should be used. Antitoxin should be given in large doses; daily injections of 200 to 300 units and in addition, on the first day an intradural injection of 400 to 500 units, with the head lowered. The spasms can be controlled by chloral hydrate, as much as 10 gms. daily, and the subcutaneous injection of magnesium sulphate, 20 ccm. of a 25 per cent solution 5 to 6 times daily. In spasms of the glottis, efforts should be directed toward limiting normal respiratory movements and inducing artificial respiration. The former can be accomplished by bilateral phrenicotomy combined with tracheotomy, intradural injection of magnesium sulphate, and the administration of large doses of morphine. If one is prepared to give artificial respiration there is no danger in large doses of morphine. Artificial respiration of oxygen is of great value. A. Goss.

Meyer, A.: Intraneural Injection of Tetanus Antitoxin in Local Tetanus (Die intraneurale Injektion von Tetanusantitoxin bei lokalem Tetanus). *Berl. klin. Wchnschr.*, 1915, lii, 975.

It has previously been demonstrated experimentally that the injection of antitoxin into the nerve-trunk of the affected limb saves animals that have been infected with tetanus. Meyer thinks, however, that this method of treatment has not been applied clinically so much as it should be, and describes cases in which he feels confident that such intraneural injections have saved the lives of patients. Many surgeons believe that the prognosis in local tetanus is good anyway, without treatment, but he finds that local tetanus is often only a precursor of general tetanus, which may be warded off by intraneural injection before the distribution of the toxin becomes general. A. Goss.

SERA, VACCINES, AND FERMENTS

Waasbergen, G. H. Van: Abderhalden's Ferment Reaction in the Non-pregnant (Zur Abderhalden'schen Fermentreaktion bei Nichtschwangeren). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xlii, 693.

After a short review of the literature the author describes the technique of the dialysis method.

Among 69 cases in non-pregnant women he had only 7 negative results, but the reaction was less pronounced, as a rule, than in pregnant women. Positive reactions are more frequent and intense in younger women, while in older ones negative reactions are more frequent. Fever increases the intensity of the positive reaction and causes some negative cases to become positive. The reaction becomes more intense as the menstrual period approaches, while just at the beginning of the period and shortly thereafter it grows weaker again. In general, he says, there is a positive reaction in all pregnant women and in non-pregnant ones in the premenstrual period. A. Goss.

Trémolières and Loew, P.: Pyoculture and the Opsonic Index (Pyoculture et index opsonique). *Bull. et mém. Soc. de chir. de Par.*, 1915, xli, 1601.

The work of Trémolières and Loew was done on 24 cases, in 15 of which pyoculture was positive. Operation was performed and the local and general condition improved, except in one case in which death was caused by septicaemia. In 5 other cases pyoculture was positive, but operation has not been performed yet. The suppuration persists and cachexia is developing. In 4 of these 5 cases the surgeon has decided that operation is necessary. Early operation in accordance with the indications of pyoculture would probably have been better for the patients. Pyoculture was negative in 4 cases and operation was not performed; the local and general condition of these cases has improved steadily. Pyoculture may be positive for some kinds of bacteria and negative for others.

From the results obtained the authors conclude that a decidedly positive pyoculture indicates operation, while a negative or nearly negative pyoculture furnishes a favorable prognosis without operation. The clinical course in all their cases confirmed these conclusions. As a further test of the method they determined the opsonic index in all their cases. In most of the cases the results of the tests were the same; that is, with a positive pyoculture the opsonic index was deficient, and with a negative pyoculture the opsonic index was favorable. But in the few cases where the results were divergent it was pyoculture that was in accordance with the clinical developments and the opsonic index that was deficient. For example, a case of surgical erysipelas was complicated by a superficial abscess of the mastoid region, and showed a positive pyoculture for the streptococcus, and an opsonic index of 2.48 for this microbe. The abscess was incised and healed in three days, which seemed to show that the opsonic index was right, but three days later an adenophlegmon of the neck developed, which vindicated the pyoculture.

In discussing this case DELBET pointed out that it is not the intention to criticize the opsonic index, but merely to show that it cannot well be applied to infected wounds, because of the complexity of the bacterial flora found in them. Moreover pyoculture

is simpler and easier to carry out and does not demand a skilled bacteriologist, for no matter whether all of the bacteria are identified or not, if the body is reacting poorly, operation is indicated. A. Goss.

BLOOD AND LYMPH VESSELS

Schum, H.: Pathology of Diseases of the Blood-Vessels Which Are Important Surgically, and of Aneurism of Peripheral Arteries (Beitrag zur Pathologie chirurgisch wichtiger Gefässerkrankungen und der Aneurysmen peripherer Arterien). *Deutsche Ztschr. f. Chir.*, 1915, cxxxiii, 457.

The greater part of this work of 36 pages, which is followed by a bibliography of 122 titles, is devoted to a review of the recent literature on aneurisms. In addition, however, Schum reports some cases from his own clinic.

The first case was that of a 54-year-old man, who had had a popliteal aneurism on the right side extirpated four years before, and recently after lifting a heavy load felt a sudden jerk behind his left knee, followed by pain in the heel and beginning gangrene of the toes. As the gangrene continued to extend, amputation was performed and an aneurism of the popliteal as large as the fist was found. The specimen is described macroscopically and microscopically.

The second case was that of a 35-year-old man, who had his leg crushed above and below the knee. Soon after the accident he was admitted to the hospital, with swelling of the popliteal space and coldness and pulselessness of the thigh and foot. On operation the popliteal artery and vein were found ruptured. The vessels were sutured and the patient recovered, after suppuration of the wound.

The third and fourth cases were false aneurisms of the gluteal arteries in men of 78 and 60. The first had fallen on his left buttock some weeks before the development of the aneurism, and showed a fluctuating, non-pulsating tumor the size of a child's head. Puncture was negative. On incision masses of dark clots were found and after their removal there was severe arterial hæmorrhage from the gluteals, which were ligated. Six days later death resulted from pneumonia. The second patient was hurled from a rafter and struck on his left buttock; there was pain in the buttock and leg and swelling of the buttock alternately disappearing and recurring. About two months after the accident, on admission to the hospital, there was swelling with fluctuation but without pulsation or murmur. Incision along the fibers of the gluteus maximus revealed an aneurismal sac with black walls, and when it was incised 500 ccm. of dark clots and blood was discharged, followed by severe hæmorrhage from a median branch of the superior gluteal. As ligation did not stop the bleeding, it was necessary to dissect out the artery to the bleeding point. After hæmorrhage was controlled a sac was seen as large as two fists, but it could not

be extirpated on account of the condition of the patient. Recovery was slow on account of infection of a hæmatoma that developed, and there was some weakness of the leg after recovery. A. Goss.

SURGICAL THERAPEUTICS

Dakin, H. D.: The Use of Certain Antiseptic Substances in the Treatment of Infected Wounds.
Brit. M. J., 1915, ii, 318.

The work of ascertaining the comparative value of the antiseptics mentioned, was conducted in the laboratories of the Rockefeller Institute for Medical Research attached to Hospital 21 of the French Army at Campagne.

The author calls attention to the different factors to be considered in selecting a suitable antiseptic aside from its germicidal value. These bear upon irritation to the tissues, toxicity, solubility, ability to penetrate and to be absorbed, and finally, chemical reactions with proteins and other tissue constituents. The antiseptic property of an ordinary antiseptic is a chemical reaction between it and the proteins and also on other cell constituents of germ life. Compared to the effect of antiseptics on germ life *in vitro*, the reaction which takes place in the presence of living and dead tissues is more complex and the action of the antiseptic is much more difficult because the latter acts not only on the micro-organisms, but on other protein substances as well; thus certain compounds lose all or nearly all of their antiseptic value in the presence of blood serum or similar substances. This reduction of their value is emphasized by the results of experiments with such well-known antiseptics as phenol, salicylic acid, hydrogen peroxide, iodine, mercuric chloride, silver nitrate, sodium hypochlorite, and a few others.

Phenol and hydrogen peroxide are shown to have low germicidal power when acting in the presence of serum. Mercuric-chloride loses its antiseptic value in the presence of many tissue constituents, and it suffers an additional disadvantage of being irritating even in dilute solution. Silver nitrate is but little better than mercuric chloride. Iodine, an exceptionally good skin disinfectant, is less effective in deep wounds by reason of protein coagulation and irritation of the tissues. Its penetrating power is slight and wounds which have been treated with it cicatrize slowly.

Sodium hypochlorite has shown itself to be the most desirable antiseptic on account of its permeability, solubility, non-toxic effect, and its high germicidal value.

Objection is made to the use of sodium hypochlorite as ordinarily prepared, as it is variable in composition, and on account of the presence of free alkali and sometimes free chlorine, it is very irritating to the tissues.

A solution for ready use containing 0.5 to 0.6 per cent of sodium hypochlorite is prepared as follows: "One hundred and forty grams of dry sodium

carbonate (Na_2CO_3) or 400 grams of the crystallized salt (washing soda) is dissolved in 10 liters of tap water, and 200 grams of chloride of lime (chlorinated lime) of good quality added. The mixture is well shaken, and after half an hour the clear fluid is siphoned off from the precipitate of calcium carbonate and filtered through a plug of cotton; 40 grams of boric acid are added to the clear filtrate, and the resulting solution is ready for use. A slight additional precipitate of calcium salts may slowly form, but it is of no significance. The solution should not be kept longer than one week. The boric acid must not be added to the mixture before filtering, but afterward."

The employment of boric acid makes the mixture practically non-irritating by maintaining its approximate neutrality. The slight antiseptic property of boric acid has nothing to do with its employment; its chief use is in maintaining a neutral condition or a reaction that is very nearly neutral under all conditions.

The best results in wound treatment are obtained by bringing fresh quantities of the solution in contact with all parts of the wound very early after the injury, and at frequent intervals. Five to 10 ccm. may be introduced into small wounds every two hours by means of rubber tubes, through a pipette or syringe. In compound fractures of the femur of great severity 1 or 2 liters may be irrigated daily. Continued irrigation may be used for a week without irritation, although it is well to guard the surrounding skin by the application of vaseline. As a wet dressing, the solution may be used almost indefinitely. The solution readily attacks the (NH) groups present in proteins and this makes it of great value in dissolving necrosed tissues. Notwithstanding the fact that it has hæmostatic properties, it should not be injected intravenously since it is actively hæmolytic.

The author claims that the results with the use of the solution at the front, during a period of six months, in those cases where treatment was commenced a few hours after the wounds were received, have shown its genuine value. The cases in which there was no rise of temperature of any consequence, and in which healing occurred without suppuration was very large.

The following figures indicate the antiseptic value of the solution: "Staphylococci suspended in water are killed in two hours at a concentration of hypochlorite between 1:500,000 and 1:1,000,000, while in the presence of serum the necessary concentration is between 1:1,500 and 1:2,000. Streptococci are more readily killed; while bacilli pyocyaneus suspended in water are killed in two hours at a concentration between 1:100,000 and 1:1,000,000; in serum between 1:2,500 and 1:5,000 is necessary.

Hypochlorites should not be used in conjunction with other antiseptics, alcohol or ether, because of their active chemical properties.

LOUIS A. LA GARDE.

ELECTROLOGY

Graff, E. von: Experience with Radium and Röntgen Rays in the Treatment of Cancer (Über die bisherigen Erfahrungen mit Radium und Röntgenstrahlen bei der Krebsbehandlung). *Strahlentherap.*, 1915, v, 627.

The author at first had very bad results with large doses — as high as 250 mg. radium. Of 11 women treated in this way 9 died. Now he uses the dosage recommended by the Wertheim clinic, from 15 or 20 up to 94 mg. radium, with a combination of platinum and brass filter, using 0.2 to 0.5 mm. platinum and 0.45 to 0.6 mm. brass. As a protection against secondary rays 1.5 to 3 mm. rubber is used. The length of application and the amount of radium used are determined by the local and general reaction. A dosage of 40, 55, or more rarely 74 mg. of radium is applied and left for 24 to 48 hours, and the treatments repeated once or twice at intervals of two to three days. A second series of irradiations is given after an interval of three or four weeks, and sometimes a third. Using this technique the author has had no further injury from the rays.

He has treated 102 carcinomata in all, 6 with mesothorium or mesothorium and radium, 73 exclusively with radium, 23 with radium and röntgen rays. This combined treatment gave very good results. Of the cases 21 were clinically operable, 21 were recurrences, leaving 60 inoperable cases. From clinical observation of the cases, he concludes that with radium, and especially in combination with intensive röntgen treatment, great improvement can be secured in inoperable cases, much greater improvement than has ever before been obtained by any other method. Many inoperable cases have been rendered operable and sometimes improved to such an extent that a diagnosis of carcinoma could not be made by examination. But there may be recurrence after such apparent recoveries. Wertheim's clinic still advocates using radiotherapy only on inoperable carcinomata, and on operable ones only where operation is for some reason impossible or is refused.

A. Goss.

MILITARY SURGERY

Lapointe, A.: Operative Treatment of Injuries of the Skull in an Ambulance at the Front (Le traitement opératoire des blessures du crâne dans une ambulance de l'avant). *J. de chir.*, 1915, xiii, 241.

Lapointe reports 127 cases of injury of the skull operated on in his ambulance. He practiced early and systematic operation in all cases, excluding only those that were so nearly dead that there was no hope. He made a crucial incision in the scalp wound, examined for fractures, removed any fragments of bone, irrigated with hydrogen peroxide and dressed with iodoform gauze. Trephining was necessary only in comparatively few cases.

He divides the cases into three classes: (1) those

with superficial injuries, with or without injury of the dura mater; (2) those in which the projectile had passed entirely through the head; and (3) those in which the projectile had entered and lodged in the brain.

There were 47 cases of superficial injury without penetration of the dura mater; 7 of these died, one from a cause independent of the skull injury, leaving a mortality of 13 per cent. The mortality in the 48 cases with perforation of the dura was 56 per cent, or, eliminating the very bad cases which would have died anyway, 51 per cent. Infection was the usual cause of death. Of the 7 cases in which the bullet passed entirely through the head, 6 died and the one who recovered was left with a paraplegia.

There were 25 cases in which the bullets had lodged in the brain. Operation in these cases was limited to extracting fragments and trying to limit infection; the projectiles were not removed; nevertheless the mortality was 56 per cent. Moreover those who recovered are still subject to the danger of late infection from the projectiles. Lapointe thinks that as a result of the present war the idea of leaving such projectiles will probably be reversed, and it will be thought best to make immediate röntgen examination and remove them.

His experience shows the comparative harmlessness of extradural injuries and the terrible mortality of intradural ones. The mortality of all the intradural injuries together was 58.75 per cent. Part of this high mortality was due to the fact that it was impossible to operate early enough; only 22 of their 127 cases were operated on the day of the injury; the remainder was due to the insufficient first aid given. Scarcely any of the wounded men had been shaved around the wound before the first dressing was applied. The importance of this measure is shown by comparing the mortality statistics of head injuries among the Russians, who had long hair, and the Japanese who had their heads shaved. Better results can only be obtained by more efficient first aid and earlier operation.

A. Goss.

Le Fort, R.: Treatment of Injuries of the Skull in the Military Zone (Traitement des plaies du crâne dans la zone des armées). *Bull. et mèm. Soc. de chir. de Par.*, 1915, xli, 1466.

The most interesting part of Le Fort's communication is that dealing with his work in the base hospital. Here the soldiers arrive from 1 to 10 days after being wounded; some of them have been trephined at the front, others have not been treated at all. He points out the necessity of trephining all of the latter as a preventive measure and cites the case of a man with apparently only a slight scalp wound, which was simply dressed and he went away apparently well; thirty-three days later he was suddenly seized with fever and intense headache, and on the skull being trephined half a glass of pus was evacuated; he died 48 hours later.

Any injury of the skull not trephined should be

under suspicion for several months, for the results of unsuspected infection may appear after that interval. Even cicatrization of the scalp wound does not prove that the danger of secondary signs of infection is passed. Further cases are cited showing that there may be abscess of the brain or diffuse meningo-encephalitis even after scalp wounds, without fracture or fissure of the cranial bones, and still another case that seems to show that such accidents are due to deep intra- or extradural hæmatomata at the point of contusion.

The point of entrance for bacteria may even be wounds of the face or neck, without any injury of the skull or scalp at all. In order to foresee and prevent the fatal results of these cerebral infections it is necessary to keep close watch over cases of head injury. The symptoms usually given, motor disturbance, headache, fever, and vomiting, are not particularly helpful, either because they are inconstant or appear too late. There are three signs however, that Le Fort has found of value. The most common and most valuable of these is slowing of the pulse; if the pulse is lower than 55, examination of the fundus of the eye is indicated. The examination of the fundus of the eye is also extremely important. The optic disc is a prolongation of the brain, and its appearance may afford surgical indications. Abscess of the brain is often accompanied by changes in the fundus of the eye. Changes in character afford the third indication. He has frequently trephined for only one of these signs, and has seldom failed to find conditions justifying the intervention. He points out the extraordinary insensibility of the brain and its great tolerance. Brain operations may be performed without any pain and without anæsthesia if there is already an opening in the skull. A. Goss.

Tornai, J.: Pathology and Treatment of Hæmothorax in War (Beiträge zur Pathologie und Therapie des Kriegs-Hämatothorax). *Wien. klin. Wchnschr.*, 1915, xxviii, 812.

Fortunately most soldiers with gunshot wounds of the thorax recover. The entrance and exit wounds generally heal quickly, leaving only a small scar, but in a considerable number of cases there is intrathoracic hæmorrhage. There is very little displacement of the heart from these hæmorrhages, but the lung on the affected side, even the part of it that is not compressed by the blood, becomes inelastic and flaccid, so that it takes little or no part in respiration. If this compression of the lung is allowed to persist for weeks or months the lung loses its functional capacity to a greater or less extent and it is almost impossible to restore it. Often there is marked retraction of the affected half of the lung soon after the injury. The compression offers a favorable opportunity for the development of catarrhal, or sometimes tubercular infection. Tornai recommends systematic puncture for this class of cases. He has used it in 36 cases with complete recovery in 12, so that they returned to the

front and took up the same service they had left. There was relative recovery in 19; these also returned to the front, but were placed under less strenuous service. Of the other cases, in which the results were not satisfactory, 4 had had old tubercular lesions which were reawakened by the puncture.

Before giving this treatment, careful examination should be made for old tubercular foci. At the first puncture 300 to 500 ccm. of blood is removed; in three or four days the puncture is repeated, watch being kept over the pulse and heart action, and 300 or 400 more ccm. of blood removed; a week later, at the third and last puncture the remainder of the blood is removed, if there is not more than a liter. There is no danger of secondary hæmorrhage from the lung.

Puncture in hæmothorax has always been avoided in civil surgery; but most of the cases in civil practice are due to carcinoma or tuberculosis, where the conditions are very different from those in military surgery. Hæmothorax in civil practice if caused by a gunshot wound in a healthy individual should be treated in the same way, and this systematic puncture is an indispensable treatment in wounds of the thorax in war. It is true that hæmothorax often recovers spontaneously, but the absorption of large quantities of blood takes a long time and is apt to leave the lung permanently damaged. A. Goss.

Läwen, A.: Gunshot Injuries of the Abdomen and Their Early Operation in the Field Hospital (Erfahrungen über Bauchschussverletzungen und ihre Frühoperation im Feldlazarett). *Beitr. z. klin. Chir.*, 1915, xcvi, 47.

In the Balkan War and the early part of the present war conservative treatment of abdominal injuries was almost universally recommended. Läwen, however, together with many other surgeons, now believes that early operation is to be recommended. Of course conditions were different when the armies were on the march; but now with the comparatively stationary position in the trenches and the added experience that has been gained from a year's war surgery the prognosis after operation has improved, while the prognosis under expectant treatment is, as always, very bad. He gives the histories of 21 cases treated conservatively and 21 operated upon. Of the former only 2 lived, and 19 died; of the latter 9 lived and 12 died.

The most certain sign that the intestine has been injured is rigidity of the abdominal walls and tenderness on pressure. Vomiting is not so constant; it only appears later as a sign of peritonitis. Another sign of injury of the intestine is the discharge of gas from the intestine into the abdominal cavity. This is manifested clinically by the disappearance of liver dullness. In gunshot injuries of the liver expectant treatment is justified if it is improbable that the intestines are also injured. Early operation is indicated, however, if there is copious hæmorrhage into the abdominal cavity.

Most of L  wen's operations were performed under chloroform-ether an  sthesia. It is inadvisable to give morphine before the an  sthetic, because the patients have generally had morphine injections to control their pain while on the way to the hospital. Moreover, men who have bled a great deal or who have had head injuries react more than normal to morphine.

Most of the intestinal injuries were repaired with interrupted sutures; some with purse-string sutures. The abdomen was drained in most cases; the peritoneum must practically always be regarded as infected. The abdominal wound was sutured in layers, but a few wire sutures were inserted through all the layers in view of the possibility that the patients might have to be moved suddenly at any time. L  wen thinks that a patient who has been operated upon is in a better position to endure transportation than one who has not. Nevertheless he thinks they should be kept in the hospital, unless it becomes absolutely necessary to move them, until all possibility of complications is passed.

A. Goss.

Delore, X.: Abdominal Surgery in an Ambulance at the Front (Notes sur la chirurgie abdominale dans une ambulance de l'avant). *Lyon chir.*, 1915, xii, 229.

Delore discusses the advisability of operation on abdominal wounds and decides that it depends on the conditions under which the operation must be performed. He believes that laparotomy should be performed if it can be done under aseptic conditions. He is unable to give statistics, for the majority of his patients could not be followed, but in a study of over 1,500 cases he does not know of a case of penetrating wound of the abdomen not operated on that recovered. Several were sent to him with a diagnosis of penetrating wound, but he found the bullets lodged in the abdominal wall. Such cases, he believes, furnish the statistics for the advocates of conservative treatment. On the other hand, he has had recovery in a number of cases that he operated on, details of a number of which are given. However, under the conditions in which he worked during the first few months of the war—an ambulance on the front line with sometimes more than 800 patients a day—operation, also, is hopeless; but since he has had a stationary hospital and has been able to train a corps of assistants the situation is quite different. A great part of the surgeon's effort must be directed toward establishing conditions under which operation can be performed with hope of success.

A. Goss.

Le Fort, R.: Fracture of the Patella in Military Surgery (Fractures de rotule en chirurgie de guerre). *Bull. et m  m. Soc. de chir. de Par.*, 1915, xli, 1556.

Le Fort describes 9 cases of fracture of the patella, including simple fractures of the patella alone, compound fractures of the patella alone, and

compound fractures complicated by fractures of the condyles of the femur. Five of the cases belonged to the latter class which is, of course, by far the most serious. Of these 5 patients one had to have the femur amputated later for an acute arthritis. The limb was preserved in the other 4 cases. In one of these cases there was ankylosis after total resection of the patella. The others have complete function of the limb after having undergone suppurative arthritis of varying degrees of intensity.

Gunshot wounds may produce fractures of the patella with separation of the fragments; these fractures may be comminuted, even when they appear to be simply transverse. The fragments are generally held very nearly in their normal place by fibrous tissue, so that the patella retains almost its natural shape. Fragments may be detached by the projectile and carried into the neighboring tissues. Fracture of the patella does not make the prognosis of injuries of the knee particularly worse. If there is injury of the condyle it exceeds in importance that of the patella. An injury of the knee with comminuted fracture of the patella is not necessarily an indication for amputation. Prophylactic amputation after injury of the knee is absolutely unjustified. Amputation should only be performed after the failure of conservative treatment or resection of the knee.

A. Goss.

Newton-Davis, C.: Shrapnel Wounds of the Knee-Joint. *Indian M. Gaz.*, 1915, I, 245.

The two cases reported had pieces of shrapnel within the knee-joint. The missiles entered from the posterior aspect of the knee, passed through the popliteal space, and finally lodged in the knee-joint itself. The remarkable thing about these cases was the depth to which the bullet penetrated without doing excessive damage to either soft tissues or bone, and the excellent results obtained by open operation.

J. H. SKILES.

Tuffier, T.: Resection in Reference to Amputation in Certain Infected Gunshot Fractures of the Knee-Joint. *Bull. Acad. de m  d., Par.*, 1915, No. 23.

Gunshots of the knee by rifle bullets generally heal kindly, but those from shrapnel and shell fragments undergo suppuration and end in ankylosis after months of convalescence. Tuffier was surprised during his recent visit at the front to hear the operating surgeons proclaim the doctrine that all infected gunshot of the knee should be treated by amputation. Of 200 amputations through the thigh for this cause, 30 of them were for simple perforation of the articulation by the rifle bullet. Resections had been practiced but seldom. He performed resection of the knee in four cases in which amputation appeared to be the only resource, with excellent results.

The lesions found in the knee were a source of surprise. The broken femur, tibia, and knee-cap were not attended with any unusual conditions, but the synovial membrane, and all of its folds and

recesses, was as thick as the two hands together, very much infiltrated by inflammatory products, red and lardaceous, presenting the appearance of a tubercular synovitis. This condition went far to explain the intensity and duration of the septic process in knee-joint cases. Since 10 per cent of amputations of the thigh have to suffer re-amputation or other secondary operations about the stump, the author advises resection in preference to amputation.

LOUIS A. LAGARDE.

Hansing, W.: Treatment of Infected Wounds of the Knee-Joint (Die Behandlung der inficierten Kniegelenksschüsse). *Beitr. z. klin. Chir.*, 1915, xcvi, 32.

Hansing reviews the reports from the literature of all the infected wounds of the knee-joint in the Balkan War and the present one. He has had 34 injuries of the knee-joint, 23, or 67.6 per cent, of which were infected. He gives the histories of these cases.

At first he was inclined to favor conservative treatment, but in view of its poor results he is now an advocate of early radical treatment. In only 5 of these cases, 21.7 per cent, was he able to save the joint by resection; in 9 amputation was necessary. Eight of the patients, 34.7 per cent, died. This was not entirely due to the conservative treatment, for some of the patients were in such bad condition they would probably have died anyway; but 4 of the cases, he thinks, might have been saved by radical treatment.

The reason conservative treatment offers such poor results in knee-joint surgery lies in the complicated structure of the joint, with its numerous recesses and many bursæ, part of them connecting with the joint cavity. Only a slight interference with the discharge of the wound, sometimes without much fever, suffices to produce intramuscular phlegmons. For these reasons, too, knee-joint injuries are particularly apt to be injured by transportation.

The author's treatment is as follows: The diagnosis is confirmed by exploratory puncture and if absolute rest of the limb supplemented by Bier's hyperæmia does not soon produce improvement, as shown by daily temperature records, he either makes numerous incisions or, if the case is more severe, opens up the joint through an arched infrapatellar incision, explores all recesses, examines for abscesses or bone fragments, elevates the limb on a Volkmann's splint, and provides for free drainage. If bacteriological examination shows hæmolytic streptococci, amputation should not be long delayed, especially if the patient has been transported some distance and there is reason to suspect that there is already periarticular infection. Also, if there has been much crushing of the bone, or a suppurating fracture, amputation should be performed early. If there are signs of sepsis and continued suppurative resection offers little chance of success. If the joint has been opened without suc-

cess, amputation should not be delayed more than 10 or at most 14 days, even if beginning sepsis does not force operation sooner. The best method of amputation is with a circular incision and open treatment of the wound. Reamputation is generally unavoidable. If possible the patella should be preserved for a later plastic operation on the stump by Gritti's method.

A. Goss.

Delbert, P.: Studies on the Therapy of War Wounds. *Bull. Acad. de méd., Par.*, 1915, No. 23.

Following a special study of pyocultures, the principle and technique of which had been previously reported to the Academy of Sciences, Delbert was able to make the following report of the therapeutic value of certain substances in wound treatment:

1. Iodoform has no effect upon the flora of a wound — it is useless.

2. Irrigation and dressing with ether preparation does not modify germ life. In two instances microbes increased in number.

3. Irrigation with solution of nitrate of silver 1:1000 has augmented the number and vitality of the microbes.

4. Powdered lactose acts as a deodorant, but its action as a deodorizer is probably due to some modification of the odor-producing substance, rather than any action the drug may have upon the microbes. Microbes multiply under a crust of lactose.

5. Irrigation with solution of dioxogen does not check the development of germ growth including anaerobes. Pyoculture shows that in many cases the relations of the secretions of the wound and the microbes are modified to the detriment of the patient.

6. The solution of dioxogen injected into the cellular tissue to arrest the spread of gas phlegmon is harmful. If pure unattenuated cultures from the pus of a case of gas phlegmon are injected into a guinea pig, followed or preceded a few minutes by injections of a solution of dioxogen at the same point, the animals in which the dioxogen was used will suffer more than the controls which have not received the injections of the dioxogen solution. In the series in which the animals have survived, those which were treated with dioxogen have suffered from large phlegmons which have opened spontaneously, while those in which no dioxogen was used only exhibited indurations which disappeared without rupture.

In the series in which the animals died, the controls lived two and three times longer, and the gravity of the infection was always proportional to the amount of dioxogen solution used.

7. The antiseptics experimented with have been proved to be disadvantageous in that they destroy tissues and do not entirely destroy microbes. The author favors the use of asepsis in aseptic and infected wounds.

8. Natural barriers, whatever they may be, should be conserved. Solutions of equal concentra-

tion to blood serum should be used, free from chemical action.

9. The most powerful method of combating infection has been found to be the exposure of wounds to the air and sunlight. Experiments with Petri dishes in the laboratory have shown that four thicknesses of gauze will protect against infection from the air. Wounds are thus covered and exposed as many hours daily as possible, the more the better. After 48 hours of exposure to air and sunlight pyocultures become negative.

LOUIS A. LAGARDE.

Brun, H.: Treatment of Wounds and Immobilization in War (Über Wundbehandlung und Immobilisation im Kriege). *Deutsche Ztschr. f. Chir.*, 1915, cxxxiii, 593.

The author has had extensive experience as a military surgeon, having been the leader of a Red Cross expedition in the Turko-Bulgarian war, and being now the chief surgeon of a military hospital in Strassburg. During the course of his work he has evolved some independent therapeutic principles, especially in the treatment of wounds of the extremities, of which he has had 1,330 cases. As pure asepsis cannot be carried out in the treatment of wounds in war, it is necessary to resort to antiseptic treatment, and care must be taken also to prevent wounds from closing up from the outside and retaining wound secretion in their depths. He tried balsam of Peru at first and found it unsatisfactory, then he used sterile oil, adding to it as antiseptics first creosote, then camphor, and later iodoform. But he found these oil emulsions were too thick, so he added ether to the mixture. The formula that he finally adopted was: sterile olive oil 100.0, ether 100.0, iodoform 4.0, camphor 10.0. This solution is clear and amber-colored. The skin around the wound is painted with iodine, the edges of the wound are held apart and the solution poured in until all recesses are penetrated. Then the wound is lightly covered with sterile gauze which is fixed with adhesive, and the limb immobilized. Brun's results have been very satisfactory and he states that he has never had any injury from the iodoform.

For the immobilization of the limb he uses plaster splints, the preparation and application of which he describes in detail with illustrations. The splints can be strengthened by rolling in the edges or incorporating wire in them. In applying the splints to the trunk or an extremity, they are padded with cotton wool, and in applying them to the joints transverse splints can be added to the longitudinal ones. Illustrations show how they are applied to different parts of the body. Brun prefers these splints to closed plaster casts.

A. Goss.

Bruns, P. von: Treatment of Wounds in War (Zur Wundbehandlung im Kriege). *Beitr. z. klin. Chir.*, 1915, xcvi, 189.

In the great wars preceding this one the majority of the wounds, 75 to 90 per cent, were from musketry

fire at long range and as many as 90 per cent of them were aseptic; but in the present trench war the majority of the wounds are from hand grenades and shells and rifle fire at close range. Most of them are severely infected primarily on account of the dirt in the trenches, the large size of the wound openings, the contused tissues in the bullet canal, and the length of time elapsing before the first dressing is applied. In addition to this there is secondary infection, due to careless and awkward application of the dressings, from handling, sounding, and tamponing of the wound, and through failure to put the injured part at rest, especially in the transportation of bone and joint injuries. For example, in a base hospital among 34 cases of joint injury, 23 were infected, and only 15 of these lived, and only 6 of them did not lose their limb.

It is interesting to note the difference in the treatment of infection in the German and in the allied armies. In the allied armies much importance is attached to Wright's lavage with salt solution of the wound after it has been freely opened and drained: the discharge of lymph from the wound is furthered by the use of hypertonic 5 per cent salt solution with the addition of one-half per cent sodium citrate; this is applied on hot compresses or, better, the limb is placed in a bath of it. Other English and French surgeons use very strong disinfectants, such as pure carbolic acid. The German physicians prefer physical methods of treatment to these chemical agents. They advocate placing the part in absolute rest, especially in bone and joint injuries, free opening, counteropenings, and drainage, also irrigation with very mild antiseptic solutions, constant watchfulness to see that the discharge of wound secretion is not interfered with, light absorbent dressings, but no water-tight, closed moist dressings, in severe cases permanent baths or permanent irrigation, and open treatment of wounds. The author desires to stimulate his colleagues in military surgery to publish their experience in this most important field of wound infection and its treatment.

A. Goss.

Gray, H. M. W.: Treatment of Gunshot Wounds by Excision and Primary Suture. *Brit. M. J.*, 1915, ii, 317.

The author is a strong advocate of excision and primary suture of gunshot wounds. He claims the following advantages:

1. Healing by first intention is assured in the vast majority of properly selected cases.
2. Much time is thereby saved. Some wounds which would otherwise require months to heal are soundly united in the course of ten to fourteen days. The soldier is thus available for duty again at a much earlier date.
3. The amount of attention necessary to be given by the attendants is greatly reduced.
4. Much pain is avoided.
5. The amount of dressings required is reduced to a minimum, and in this way expense is lessened.

6. Complications which may arise from the presence of a septic wound are avoided.

7. A more sightly scar is obtained.

8. Because of the absence of contraction which would accompany formation of a large cicatrix, there is less impairment of function in the part concerned.

9. In the case of head injuries, excision of the wound, especially in some apparently trivial injuries, provides a means of ascertaining with greater certainty than by any other method, whether depressed fracture or injury to the brain exist.

He says that the extent of the wound makes no difference as regards operation and that it is not necessary to wait until the wound is surgically cleaned; in fact, the sooner the excision is done the better. Any prolonged attempts at cleaning softens the adjacent parts to such an extent that the sutures will not hold.

The only contra-indications, in his opinion, are when there is a great mass of inflammatory tissue surrounding the wound and even then by vigorous treatment with hypertonic salt solution such wounds are usually rendered suitable for excision in 24 to 48 hours. Other contra-indications are the presence of marked pocketing in the wound and exposure of vascular or nerve-trunks in the depth, or of bone which it is inadvisable or impossible to remove; but in any case excision of the soiled edges of skin and of the superficial connective tissue and muscle may be done with advantage. The operation can usually be done under infiltration anaesthesia.

For disinfecting purposes he favors a strong iodine solution, as strong as 10 per cent.

Having cut away a thickness of one-third to one-half inch on all sides of the wound down to its greatest depth, fresh towels, instruments, and gloves are used, and the wound is sutured. He uses a form of wound varnish for the dressings and speaks highly of it.

D. C. BALFOUR.

Gros, E. L.: Transportation of the Wounded.
Boston M. & S. J., 1915, clxxiii, No. 1.

Gros blames the confusion of evacuating the wounded to the fact that the lines of transportation are the same as those used for the conveyance of troops. He criticizes the war maxim that makes transportation facilities observe the implacable formula to move ammunition first, food second, the wounded third. Commenting on the loss of life incurred by observing this maxim the doctor refers to the practice as cruel, senseless, and useless.

The task of the military surgeon in evacuating the wounded is vividly described. Thus there may be but 300 to be evacuated all along the French front in three weeks, and again there may suddenly be 10,000 or 20,000 or even more in a day, as in the battle of the Marne, with consequent congestion of the lines of transportation.

Again, the army may advance, remain stationary, or retreat. When it advances and remains stationary, evacuation of the wounded is a simple per-

formance for the sanitary service. But when the army is in retreat, the *postes de secours* are in confusion.

The scenes of hardship of the wounded in the trenches which are shared alike by the surgeons and sanitary personnel are also interestingly told. The relief corps remain behind the combatants, in third line trenches, in trench rooms, with logs and sod-covered roofs. The wounded are brought to these dressing stations, about one to each battalion, with much difficulty owing to the tortuous course of the communicating trenches. The wounds are here dressed, splints adjusted, etc., and the wounded are then carried one hundred yards or more to the head of communicating trenches where collecting stations are located in some house or subterranean room, possibly under a hay-stack away from shell fire, to which they were carried at some favorable moment in the lull of battle or in the night. Here vessels are ligated and other urgent operations performed. At this point the regimental service ends and the division surgeon, who is provided with ambulance transportation made up of horse-drawn vehicles and two-wheel push carts, takes charge.

Gros believes that the transportation of the wounded from the time of arrival of the wounded at the collecting station could be very much simplified and much suffering avoided by the liberal use of motor ambulances. He shows how well the Ford cars with ambulance bodies have been utilized by the American Ambulance. The article is well illustrated by pictures of these and other motor-drawn vehicles.

LOUIS A. LAGARDE.

Black, J. E., Glenney, E. T., and McNee, J. W.: Observations on 685 Cases of Poisoning by Noxious Gases Used by the Enemy. *Brit. M. J.*, 1915, ii, 165.

This series can be roughly divided into two groups: (1), those who seemed in imminent danger of death from asphyxiation, about 120 in number, (2), the remainder, who, although suffering from the effect of the gas, did not appear in immediate danger.

Of the first group, thirty-three died, giving a death-rate in the total number of just under 5 per cent. Most of the cases, on admission, were in a choking condition, making agonizing efforts to breathe, clutching at their throats and tearing open their clothes. At one moment they propped themselves up to gasp, at another they fell back exhausted by their struggles. There was marked cyanosis, especially of the lips and ears. All except those moribund or collapsed, were fully conscious and fighting desperately for life.

It was noted that the patients who lived tended to pass through three stages: (1) the asphyxial stage, (2) the quiescent or intermediate stage, and (3) the bronchitic stage. The first stage usually lasted up to thirty-six hours, a few hours made up the second stage which was followed by the third stage, bronchitis.

The treatment aimed (1) to expel the excessive secretion from the lungs by emetics and stimulating expectorants, (2) to diminish the secretion, and (3) to support the failing heart and re-oxygenate the blood.

On arrival the patients were placed in the open air, and external heat and hot drinks administered. As a routine measure, an emetic was usually given. The most successful was salt in 10-ounce doses, followed by large draughts of luke-warm water. Vomiting was induced by tickling the palate, and marked relief was experienced by the bringing up of quantities of yellowish, frothy fluid. Artificial respiration by the Schafer method was used successfully in a few cases. Stimulating expectorants were given every three hours, usually ammonium carbonate with vinum ipecacuanha. Atropine was used to diminish secretion, but with questionable results. To support the heart, venesection seemed to be of questionable value. Pituitary extract was used in extreme cases. Oxygen gave relief from cyanosis in a goodly number of the cases. Benzoin inhalations relieved some of the milder cases. Opium relieved the nervousness of several cases, inducing peaceful sleep.

Post-mortem findings were chiefly limited to the respiratory system. Intense congestion and oedema of the larynx, trachea, and bronchi were found in all cases. Acute oedema of the lungs with emphysematous areas was found in all cases. Subpleural hæmorrhages occurred in all but one case. The heart was distended and all the chambers filled. The abdomen showed no constant finding. The stomach was found in a condition of marked catarrh, the mucosa was covered with a thick, yellowish mucus, and submucous hæmorrhages were present in 9 cases out of 10 examined. J. H. SKILES.

Demmer, F.: Experiences with the Austrian Army. *Wien. med. Wchnschr.*, 1915, xxviii, Nos. 12-15.

The author's first observations refer to the wounded in Vienna where the wounded reached hospital care after 4 or 5 days, for slight injuries as a rule.

By contrast the character of the wounds at the front was severe in the large majority. At Tarnow he found 284 wounded, nearly all the wounds being of a serious nature in men whose general condition was deplorable. The relief corps was limited. Facilities for evacuation were poor, the casualties kept crowding in from the battlefield so that between September 6 and October 12, 4,300 casualties were treated. One third were treated for wounds, the others for army diseases such as dysentery, etc. Shrapnel wounds had a great tendency to suppurate with free discharge which was found of benefit when compared to those wounds in which the discharge was arrested for various causes. There were many badly infected and neglected compound fractures which were associated with high fever. Under the pressure of work and bad environments, such as often obtain in active

field conditions, it was next to impossible to perform a "clean" operation. Under these conditions free incisions to favor drainage, and amputations were resorted to in the worst cases, especially for gangrene.

Later at Sandomierz, he saw wounded shortly after they were injured. He found many cases suffering from poorly applied tourniquets and tourniquets applied when they were not indicated. He saw but few cases of gunshot wounds with threatening hæmorrhage. Personally he never saw a case which required ligature or the application of an Esmarch's bandage.

Chloroform was found to be an ideal anæsthetic in war wounds. Fractures were set and immobilized when the patients were still in a state of shock, during which an anæsthetic was not required, and when it did become necessary, from 1 to 3 grams of chloroform sufficed.

Contrary to the experience of most military surgeons the author does not look with favor on plaster of Paris as a fixation splint. It is heavy to transport, is slow in drying, and the splints soften rapidly in contact with the damp floors on which the wounded lay. He prefers wooden splints as they are lighter, easy to clean, and they are readily altered to meet the requirements of individual cases.

At Olcusz in the middle of November, close to the line of battle he saw the wounded streaming in for first dressings. There was lack of accommodation, supplies, and medical attendants, so that the severely wounded were often unattended while lying on beds of straw. The work was so strenuous that for nine days the author's only period of rest was a half-hour in the middle of the day. Conditions improved later.

Wounds of the skull and abdomen were treated conservatively at the front because of the number of wounded and the lack of time which precluded formal operations. He operated in 7 out of 62 cases of gunshot of the skull. Rapid evacuation of the wounded prevented him from noting the results of operative treatment. In 59 cases of gunshot of the abdomen treated by starvation, absolute rest, and morphine for five days he was able to transfer them to the rear much improved. LOUIS A. LAGARDE.

Joll, C. A., Connor, F. P., and Mowat, H.: Naval and Military Surgery. *Brit. J. Surg.*, 1915, iii, 113.

Several cases are reported, accompanying illustrations showing the terrible mutilating effect of present-day missiles.

A case of general septic poisoning in a man suffering with gas gangrene of the arm, with a fatal result, is reported, death being due to toxæmia. Several cases of injuries to the liver and intestines are also described.

An analysis of a series of 20 cases of gunshot wounds of the skull shows that a diagnosis of skull injuries from scalp wounds is not always easy. All doubtful cases are explored under anæsthesia.

Some surgeons advocate exploring all cases of head injuries. This to the majority, however, seems too radical a course. Each case is carefully X-rayed and if operation seems necessary, chloroform, or a mixture of chloroform and ether, is used, except in comatose cases. The scalp was thoroughly cleansed with ether, soap, and hydrogen peroxide and a solution of biniodide of mercury. A rectangular flap of soft tissue was then turned down, bleeding being controlled by Kocher's forceps. Depressed fragments of bone were then lifted and removed; missiles which were easy of access were also removed. Drainage was inserted and the wound closed. The mortality in this series was 25 per cent, four dying from meningitis and one from shock.

In gunshot wounds of the extremities, many times the bones are shattered into many fragments. These fragments, however, often act as small areas for bone regeneration and the result may be entirely beyond expectation. J. H. SKILES.

Health of the Army. *J. Roy. Army M. Corps*, 1915, April, 367.

At the onset of the war 25 hospitals, to accommodate half of an army corps, were improvised in Berlin, and many temporary hospitals were erected in the suburbs. Apart from the shortage of gauze and cotton wool the arrangements for the care of the wounded have been satisfactory.

The conditions at the front were not so good. The transportation of the wounded during the rapid advance of the army through Belgium and northern France was badly managed. The overcrowding of sick and wounded grouped together at certain points was appalling; and this was worse in overcrowded cars carrying dysenterics, enterics, and the wounded, packed together in railway trucks. The state of these patients after several days of such traveling is reported to have been indescribable. Anti-typhoid inoculations were uniformly adopted at the beginning of the war, but it was necessary to resort to many different makes of vaccines. The physicians followed different methods of administration owing to a lack of unanimity among German medical men as to the effectiveness of inoculations. The results in conferring immunity were correspondingly poor.

Tetanus is regarded as the bugbear of the German army surgeon. In 60,000 wounded Bavarian soldiers there were 420 cases of lockjaw with 240 deaths. Fourteen per cent of all deaths in the military hospitals of Strassburg died of this disease, and accusations of poisoned bullets having been used on the French side were made.

Lack of certain drugs, such as ipecacuanha for dysentery, and the supply of opium and its derivatives, as a result of restricted importations, has been a great handicap in the treatment of the sick.

The physique of the new recruits is reported as unsatisfactory. But 63 per cent of volunteers were fit for service, and causes for rejection in

normal times like varicose veins and hernia have been waived for special duty. The large number of medical men from civil communities who have been called to the front has caused a dearth of doctors in the civilian population. LOUIS A. LAGARDE.

Mayo-Robson, A. W.: Hints on War Surgery. *Brit. M. J.*, 1915, ii, 136.

Tincture of iodine should be the first remedy applied to a wound, and should be followed by a dressing of sterile gauze pads. Unless absolutely necessary this dressing should not be changed until the patient reaches the hospital. Infected wounds should be irrigated with some mild alkaline solution. Early operations on nerve injuries should be deprecated, as most of these injuries should recover spontaneously.

In primary or recurrent hæmorrhage on the field, pressure on the area should be adopted, and only in exceptional cases is it necessary or desirable to apply a ligature to the bleeding vessel. In secondary hæmorrhage, it is expedient to ligate the vessel at once without waiting for repeated hæmorrhage.

In cases of threatened gangrene, a 10 per cent solution of hydrogen peroxide should be injected deeply into the tissues and free incisions made into the gangrenous areas. The application of sutures to lacerated or infected wounds should be avoided.

In abdominal injuries a morphine injection should be administered as soon as possible. It is desirable to avoid giving food, and, as far as possible, even fluid, by the mouth. Thirst may be quenched by rectile injections of normal saline fluid.

Serious head injuries should be operated on at once for the removal of blood-clot and depressed fragments of bone.

Fractures of the long bones and injuries to joints should be immobilized by splints or some temporary apparatus before removal from the field. Immediate amputation is necessary only in case of complete smashing or almost total tearing off of a limb. In all shell wounds or septic bullet wounds a dose of antitetanic serum should be administered as early as possible after the injury. J. H. SKILES.

Tuffier, T.: Contemporary French Surgery. *Brit. J. Surg.*, 1915, iii, 100.

The author divides the surgery of the past year into two distinct periods: (1) before the war began, (2) after the war began.

The first period was characterized by steady improvement along general surgical lines. Ether became generally adopted, local anæsthesia became more popular, and lumbar anæsthesia gained some supporters. General operative technique underwent no especial change, and the use of iodine and ether in abdominal cases continued in favor.

Surgery of the heart is becoming more and more important. A case is reported of the application of three non-perforating points of suture to a right ventricle which had been wounded by a revolver bullet. Operation is especially indicated in the

case of a tuberculous lesion, for under these circumstances it yields the best results.

In surgery of the digestive tract, early operation for gastric cancer is very important. The cytodiagnostic method of Simon and Caussade consists in examining the sediment of stomach washings for cancer-cells. By means of this direct method the seat of the commencement of the growth may be diagnosed. In cancer of the colon, Cruet advocates a three-step operation. The first step consists in bringing the cancerous mass out of the abdomen. The second operation is undertaken in about eight days, the coil being removed and the posterior halves of the two ends of the intestine are sutured together. At the third operation the artificial anus is closed by enterorrhaphy.

In war surgery the following are some of the chief points learned during the first months of the war: (1) the grave infection of nearly all wounds received in warfare, (2) the necessity of rapidly transporting the wounded to a well-equipped hospital, (3) the earliest possible extraction of foreign bodies, (4) perfect immobilization of bones and of articulations, and (5) the quickest possible disinfection of the wounds.

Tetanus has been largely controlled by the use of antitetanic serum. Gas gangrene remains a very serious menace but is not without remedy in a large number of cases. Early multiple incisions or amputation seem the methods of choice.

Every wound is considered infected until proved otherwise. At the first sign of swelling, incisions are made to relieve tension. No open wound in warfare should be sutured.

Frost-bite is a serious complication. Trench-disease involves the lower portion of the legs and follows prolonged exposure in wet, miry trenches. This results finally, in many cases, in gangrene of the entire front part of the foot.

Hæmorrhage is usually controlled by ligature; the tourniquet is rarely used. Wounds of the skull which appear slight on the surface may have grave intracranial complications. So often is this the case that some French surgeons believe in trephining almost every case of wound of the skull.

Wounds of the chest are often complicated by hæmothorax. Unless definite indications arise

for puncture, for example, marked dyspnoea, cases of hæmothorax should be left alone. Empyema, generally due to the presence of a foreign body, or to wounds caused by the bursting of a shell, is treated by early thoracotomy.

Wounds of the abdomen have a much higher mortality rate in war than in civil life. In fact, the author doubts if there are twenty cases in the French army which have recovered following a laparotomy for a wound of the small intestine.

J. H. SKILES.

Ramsay, M. L., and Stoney, F. A.: Anglo-French Hospital, No. 2, Chateau Tourlaville, Cherbourg. *Brit. M. J.*, 1915, i, 966.

The article presented by the authors on their experience in the Anglo-French Hospital at Cherbourg presents some rather interesting cases, but the general report conforms more or less to the many articles already written on surgery of the war and the conduction of base and temporary hospitals. The majority of the cases reported were compound fractures, a very large percentage being septic.

The discussion of the question of tetany also tallies with the experience of others, in that the best results are associated with those cases in which the infection occurs late following the injury.

As regards the use of serum, they believe that its greatest use is as a prophylactic measure; once the disease is established, serum is of little avail.

The symptoms which they recognize as indicating the onset of tetanus, are:

1. Elevation of temperature out of proportion to the wound. Not always seen.
2. Greater pain, especially of a sharp lancinating character; also out of proportion to the wounds.
3. Slight fine tremor of the tongue and deviation, when projected, to one or other side.
4. Sometimes profuse sweating.

They speak highly of the use of medicated sawdust for clearing up offensive odors and cleansing gangrenous and septic surfaces. It was found especially valuable where there was a large lacerated surface. It is essentially an absorbent and cleansing agent and acts much in the same way as repeated boracic fomentations, but it does not require to be changed so frequently.

D. C. BALFOUR.

GYNECOLOGY

UTERUS

Flatau, S.: Should Operable Carcinomata of the Uterus Be Treated by Radiotherapy Only (Dürfen wir operable Uteruskarzinome ausschliesslich bestrahlen)? *Zentralbl. f. Gynäk.*, 1915, xxxix, 611.

Flatau advocates substituting radiotherapy for operation, even in operable cases of carcinoma of the uterus. Since December, 1913, he has not performed a radical operation for carcinoma of the cervix. After an experience of a year and a half he believes that beginning foci of cancer are entirely destroyed by radium or röntgen treatment. He has never seen a case in which either radium or röntgen rays had a stimulating effect on cancer growth, and does not believe that such effects are ever produced.

During the period mentioned he has had a greater number of recoveries than he had with an equal number of cases during the same period of time when he was performing radical operations. His mortality with operative treatment was about 12 per cent. He thinks that even metastases in the glands may be destroyed by intensive irradiation of the whole contents of the pelvis with hard röntgen rays. At any rate radiotherapy should be given a chance to show what it can accomplish, which cannot be done if only inoperable cases are treated with it. The only final way of deciding between surgery and radiotherapy is to compare a large series of cases treated by the two methods after the lapse of many years, to exclude the possibility of recurrence.

A. Goss.

McGlinn, J. A.: Prophylactic Treatment and Early Diagnosis of Cancer of the Uterus. *N. Y. St. J. Med.*, 1915, xv, 254.

After giving in minute detail the mortality statistics of cancer in general, and of cancer of the uterus in particular, the author devotes the remainder of his very instructive paper to the solution of the problem of early diagnosis (prevention) and treatment (cure).

Out of all the tremendous amount of work that has been done in recent years in cancer research, two facts stand out undisputed: (1) that there is always a precancerous state, and (2) that in the beginning cancer is a local disease. Therefore, early diagnosis and immediate removal gives the only hope of permanent eradication of the disease.

Regarding the prevention of cancer of the cervix, the author recommends the repair of all lacerations, small and large, either by trachelorrhaphy or amputation. In women more than 40 years old with deep lacerations, amputation is preferred because cancer may develop from the endometrium lining

the cervical canal. Naturally there may be lacerations of such minor degree that remedial treatment is sufficient to effect a cure of any eversion or erosion.

Degenerating fibromata and adenomata and chronic endometritis are often prodromes of cancer of the body of the uterus; hence radical removal of such conditions should be the rule, especially if the woman be at or near the menopause. Many precancerous lesions are thus removed.

Can cancer be cured? Yes, because, as the author points out, there is a time when cancer is a local lesion and, therefore, if removed at this stage of the disease, a permanent cure will be effected. If an early diagnosis is not made a permanent cure cannot be expected.

In conclusion, the author urges the necessity of an educational campaign directed toward: (1) the public; (2) the general practitioner; and (3) the surgeon.

HARVEY B. MATTHEWS.

Akerblom, N. V.: A Case of Cancer of the Uterus Apparently Cured by Radium (Ein Fall von Uteruskrebs scheinbar geheilt durch Radiumbehandlung). *Nord. med. Ark.*, Stockholm, 1914, xlvii, 1, No. 22.

The author reports a case of carcinoma of the cervix in a 46-year-old VI-para. Microscopic examination of a piece excised for the purpose showed pavement epithelium carcinoma of the cervix. After radium treatment — 10 mg. radium bromide in the cervix, and 10 mg. against the surface of the tumor for 48 hours — the carcinoma disappeared completely. Microscopic examination showed no carcinoma cells. The mucous membrane of the cervix and os showed diphtheroid inflammation with coagulation necrosis of the epithelium, but after two and a half years the patient returned with a large and rapidly growing recurrent tumor. From this case the author gives a warning against passing too favorable a judgment as to cure on the ground of negative microscopic findings.

In 15 cases treated by Bumm and Schauta, remnants of carcinoma tissue after radium treatment were found in only two. Chéron and Rubens-Duval treated 158 cases with radium, and give as an instance of cure a case which died after 15 months, the most careful microscopic examination failing to reveal any carcinoma tissue; but Akerblom thinks such a favorable interpretation of the anatomical findings is not justified.

A. Goss.

Burrows, A.: Radium Treatment of Cancer of the Cervix of the Uterus. *Am. J. Surg.*, 1915, xxix, 296.

The author gives a rather extensive review of the various methods of treatment of cancer.

So far as is definitely known, the action of radium is purely local. It has been proved by the examination of sections of malignant tissue which have been irradiated that the farther from the location of the tube the less the destruction of the cancer-cells and the less the growth of connective tissue. It is impossible, however, to measure the exact distance at which radium has no effect, for the factors involved in radium treatment vary.

An older method of treating cancer of the cervix was to place the radium, surrounded by a thick screen of dense metal—lead or platinum—in the vagina. In this manner the active rays were reduced by an enormous percentage, but secondary irritating ones were produced, thus making it necessary to use a second screen of India rubber. The time of exposure had to be limited to twenty-four hours and then sometimes a moderately severe vaginitis occurred. Later, radium in cylindrical screens of silver was introduced into the canal of the cervix and left for twenty-four hours. Ulceration cleared up more rapidly and a number of cases became operable. Still the outlying malignant tissues tended to escape with little alteration.

Stevenson of Dublin used steel needles, in form like a serum syringe needle. As they had limited distance efficiency, a number of these were pushed into the tumor itself, care being taken not to place them too near together.

The author states that he has used a combination of the older and newer; i.e., he used a strong central tube in the canal of the cervix and reinforced it by means of the needles in the outlying malignant tissues. After twenty-four to forty-eight hours the tubes were removed, and the vagina douched once or twice daily for a period of six weeks. In this way a more effective and more even radiation was produced.

With the best methods the results depend somewhat on the type of carcinoma. Those types that respond best are cases of carcinoma of the neck of the uterus which have their origin in the canal and extend through the thickness of the wall laterally and downward even though they form large polypoid growths. The type which responds least is that which rapidly grows onto the vagina and forms a deep ulcer with a high infiltrated edge or quickly invades the greater part of the vaginal wall and makes its upper part a hard, rigid tube.

In conclusion, it is difficult to tell what line of treatment is most advisable to take, but Burrows has found that fairly frequently in the course of radium treatment cancer of the cervix seems to disappear almost entirely or an inoperable case appears to have become operable.

C. D. HOLMES.

Tyler, G. T.: The Importance of Destroying the Cervical Mucosa in Subtotal Hysterectomy as a Cancer-preventing Measure. *South. M. J.*, 1915, viii, 583.

The author reports a case of squamous-celled carcinoma of the cervix occurring in a patient upon

whom a supravaginal hysterectomy had been done six years before. In spite of total removal of the cervix and repeated treatment of the recurrences by the cautery and caustics, the patient died ten months after the excision of the cervix and eleven months after the first symptoms appeared.

Tyler has collected from the literature and from personal communications from American surgeons more than 200 cases of malignant degeneration of the cervical stump. He urges the necessity of keeping in mind the idea of cancer prevention. Total hysterectomy, complete excision, or cauterization to include the portio vaginalis he considers to be the procedures most likely to be effective.

S. A. CHALFANT.

Prochownick, L.: Treatment of Uterine Cancer in the Small Hospital (Behandlung und Statistik des Gebärmutterkrebses im Kleinbetrieb). *Zentralbl. f. Gynäk.*, 1915, xxxix, 627.

Prochownick reviews his work in the treatment of cancer since 1877; in the early part of his career there was an era of almost complete therapeutic nihilism, followed by one of very radical operative treatment, which again has yielded somewhat to more conservative methods since the introduction of radiotherapy. He discusses the details of his work in the different periods and gives two tables showing the results of operation. From 1882 up to the end of 1909 he performed 328 operations on 536 patients—an operability of 61 per cent. He has permanently cured at least 8 per cent of his cases. One of the most important points at present is to further instruct the laity, so that cancer cases may be presented early for treatment. The substitution of radiotherapy for operation in very early cases is still questionable, but there is no doubt that it should be applied in those cases which develop slowly and without symptoms until they are beyond the operative stage. At any rate it marks an advance in cancer treatment.

A. Goss.

Frankl, O.: Varicose Venous Plexus of the Endometrium (Plexus venosus varicosus endometrii). *Monatsschr. f. Geburtsh. u. Gynäk.*, 1915, xlii, 139.

A generalized change can often be found in the blood-vessels of the mucous membrane of the myomatous uterus, in a hyperplastic mucosa or in mucous polyps, but in the case described by the author there was a strictly localized anomaly of the blood-vessels which caused profuse hæmorrhage a few weeks after abortion. The place involved was found in the extirpated uterus about midway between the internal orifice of the cervix and the boundary line of the fundus; it was a coagulum larger than the head of a pin reaching above the surface and firmly connecting with the underlying tissues; it looked like the plug of a comedon. Such late hæmorrhages after delivery and abortion are generally regarded as a result of retained placenta, but this case shows that late hæmorrhage

may occur simply as a result of defective involution of the vessels, without any retention of placental tissue, and even without any foetal erosion of the vessels.

Though no similar cases are reported in the literature, the author thinks that in similar cases the same anatomical picture will more frequently be found in the future, now that attention has been directed to this important possibility. A. Goss.

Lauth, G.: Condition of the Uterus in Ovarian Hæmorrhage (Über das Verhalten des Uterus bei ovariellen Blutungen). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xlii, 36.

The author has attempted to discover an anatomical and histological basis for the marked clinical resemblance between myoma and hæmorrhagic metropathy, and for this purpose has examined a number of uteri affected with metritis, and so far as possible the ovaries belonging to them. He gives ten case histories, with descriptions of the microscopical specimens, and finds that in none of these cases of metritis was there an increase in connective tissue out of proportion to that in the musculature. There was general enlargement of the uterus, but the muscle tissue and connective tissue were in the same proportion as in the normal condition. There was also marked thickening of the mucous membrane of the uterus. The author thinks he is justified in calling the condition hypertrophy of the uterus, due to increased or disordered function of the ovary.

In view of his previous animal experiments with ovarian extract, and also in analogy with the formation of myomata he thinks he is making no mistake in attributing both the hæmorrhage and the hypertrophy of the uterus to hyper- or dysfunction of the ovary, especially as in most of the cases there were changes in the ovary of the nature of cystic degeneration. Therefore, he advocates giving up the names metritis, endometritis, and hæmorrhagic metropathy, and adopting for all these conditions the name "ovarian metrorrhagia." A. Goss.

Wagner, G. A.: Treatment of Genital Hæmorrhage in Women (Zur Behandlung der Genitalblutungen der Frau). *Therap. Monatsh.*, 1915, xxix, 424.

The treatment of genital hæmorrhage in women has undergone great changes in recent years; there have been at least four important changes: (1) curettage is not used as a treatment nearly so often; (2) extirpation of the uterus, especially for climacteric hæmorrhage, is almost obsolete, and (3) and (4) organotherapy and radiotherapy have assumed great importance in treatment. These changes are due to increasing knowledge of the cause of uterine hæmorrhage. What was formerly called hypertrophic and hyperplastic endometritis is really not endometritis at all, but is a periodical change in the lining of the uterus brought about by the functioning of the ovaries.

It is now known that true endometritis does not

cause hæmorrhage. The intensity and duration of the menstrual hæmorrhage is influenced by the condition of the blood-vessels, their innervation and the condition of their walls; the condition of the uterine musculature and the coagulability of the blood. There may be disturbance of any of these factors, so that it is possible to have pathological hæmorrhage, even when the ovaries are functioning normally; so that genital hæmorrhages may be divided into two groups, one due to mechanical causes, the other to disturbance of ovarian function. Among the hæmorrhages due to mechanical causes are those from carcinoma, polyps, and erosions, and those due to submucous myomata, which stretch and tear the vessels. Hæmorrhage from other forms of myoma is ovarian in origin.

Another group of mechanical hæmorrhages is due to hyperæmia from psychic, thermal, and sexual stimulation, or to increased blood-pressure; others are due to defective contraction of the uterus from muscular insufficiency, arteriosclerosis, or syphilitic changes in the vessel walls, defective coagulation, constitutional disease, or constipation. In contrast to all these forms of mechanical hæmorrhage, are hæmorrhages due to disturbed ovarian function. The most typical representatives of this class are the hæmorrhages of puberty and the menopause, the former caused by irregularity in an organ that is just beginning to function; the latter by the spasmodic flaring up of a flame that is just about to go out. Here, too, belong most of the cases formerly called endometritis. The Abderhalden reaction shows that the ovary is involved in these hæmorrhages, as well as in those of chlorosis and obesity, and more especially in those due to myoma and affections of the adnexa. In some of the cases the hæmorrhage may be due to dysfunction of some of the other glands of internal secretion, closely connected with the ovary; Sehnert has differentiated a group in which it is caused by thyroid insufficiency. In addition to these groups there are cases in which there is actual hyperplasia of the uterine mucous membrane caused by disturbance of ovarian function.

To determine the course of treatment it is, of course, necessary to know to which class the case belongs. The mechanical cases require local treatment. The first thing to be done is to exclude cancer; until this is done conservative measures are not justified. For purposes of diagnosis the curette is almost indispensable, although it has lost its former importance in treatment. It does not put a permanent stop to hæmorrhage, for when the new mucosa grows out it is as much under the influence of the ovaries as the old, and so hæmorrhage recurs. Statistics of more than 600 cases show that there was permanent relief from curettage in less than 10 per cent. A simple and effective mechanical treatment is tamponing the uterus; the tampon may be medicated so as to increase the coagulability of the blood. Cold sitz baths are sometimes useful; digitalis treatment is valuable in cases where there is

cardiovascular derangement. In the cases of hyperæmia caused by vasomotor disturbance calcium lactate may be given by mouth, as it tranquilizes the nervous system and reduces the hyperæmia. In cases of deficient contractility of the uterus ergot may be given. Electricity is useful in some cases.

In the ovarian cases both organotherapy and radiotherapy are being used with excellent results. They aid in differential diagnosis also, for if a case proves refractory it shows that it is due to some other than ovarian dysfunction, such as unsuspected syphilis or submucous localization of a myoma. The nearer the patient is to the menopause the greater the effectiveness of radiotherapy. There is one great danger, however, that of overlooking cancer. A number of mishaps from this cause have been reported. Wagner uses the technique recommended by Gauss—intensive irradiation by the cross-fire method. Loose has had good results in juvenile menorrhagia from small doses, 2 to 3 X per ovary, with medium hard tubes applied during the hæmorrhage. After three or four applications the hæmorrhage becomes normal. According to some authors radium and mesothorium are more effective than röntgen rays and the latter are used only because they are cheaper. For hæmorrhages coming on at puberty Kelly and Burnam place small quantities of radium, 12 mg., in the uterus for 5 to 24 hours, and they report recovery in all the cases in which they have used the method. A. Goss.

Köhler, R.: Organotherapy in Amenorrhœa (Beitrag zur Organotherapie der Amenorrhœe). *Zentralbl. f. Gynäk.*, 1915, xxxix, 667.

Successful attempts have been made to treat amenorrhœa either with preparations of ovary, to take the place of the defective ovarian secretion, or with preparations of other glands, for example, the hypophysis, which are supposed to have a stimulating effect on ovarian secretion. The author, however, had performed some experiments which led him to doubt the specificity of these extracts, so he treated three series of cases: the first with extracts of ovary and corpus luteum, the second with extract of hypophysis, and the third with enteroglandol, an extract of small intestine, which could have no specific action on the ovary.

He had just as good results in the last series of cases as in the other two. The number of injections varied from 3 to 18, given at intervals of two to three days. There were no unpleasant by-effects, and some cases treated over a year ago still have normal periods; in some cases the effect disappeared after a few months and amenorrhœa was reëstablished, but the giving of another series of injections brought about normal conditions again. In one case treated with extract of corpus luteum the menses reappeared, but after a few months stopped again; a second series of injections of enteroglandol was given and normal conditions reëstablished.

The author believes that this successful action of

extract of small intestine shows that the action of these organ extracts is not specific, but that it is due to some chemical combination contained in organ extracts in general, probably to certain amines. If so, it should be possible to make a synthetic preparation that would have the desired effect. An attempt by Roche to make such a preparation cannot be regarded as successful, as the preparation has unpleasant by-effects, such as rise in temperature, dizziness, headache, and vomiting. A. Goss.

Carstens, J. H.: Removal of the Uterus Instead of the Ovaries for Incurable Cases of Menstrual Disorders. *Tr. Am. Ass. Obst. & Gynec.*, Pittsburgh, 1915, Sept.

Carstens calls attention to the early history of removal of the ovaries by Batty, Heger, and Lawson Tait, in incurable cases of menstrual disorders, and as the result of modern aseptic surgery this operation is frequently performed, in fact the removal of the ovaries is frequent for menstrual pain and other conditions. He calls attention to the serious troubles lasting for years which often ensue; that in these cases the ovaries are rarely diseased, and that the trouble is often in the uterus, in the tubes, or due to displacement and adhesions. From textbooks, lectures, and viewing operations, medical students are impressed with the idea that the removal of the ovaries will relieve the woman. Many of them, being ambitious to become surgeons, operate indiscriminately by removing the ovaries for slight menstrual disorders. Carstens calls a halt, and claims that such operations should be performed only after thorough consultation, and if it is necessary to stop menstruation, it is better to remove the uterus and tubes, either by the vaginal or abdominal route according to indications, saving one or both ovaries.

He concludes as follows: (1) All cases that require the establishment of the menopause, should be subjected to hysterectomy, leaving the ovaries. (2) Vaginal hysterectomy is preferable, but if there are extensive adhesions, and perhaps other abdominal troubles that require cœliotomy, then suprapubic hysterectomy may be performed, leaving one or two ovaries.

Hamilton, J. A. G.: Displacement of the Uterus. *Med. J. Austral.*, 1915, ii, 72.

Following a somewhat lengthy dissertation upon the normal position of the uterus and the mechanism of its support, the author discusses the varieties, etiology, symptoms, and treatment of the three most important deviations of the uterus; viz., antelexion, retroflexion, and prolapse.

In the treatment of anterior displacements the complications are first to be considered and the mechanical straightening of the flexion is of secondary importance. Dilatation and curettage, as well as some means of straightening out the uterus, is always indicated when leucorrhœa and endometritis are present.

Uncomplicated antelexion often requires nothing more than a thorough dilatation. Packing the uterus for twenty-four hours after thorough dilatation of the cervix — which may be repeated two or three times just before a period — has given excellent results in the author's experience.

The stem pessary is recommended for a few selected cases. The Dudley operation is done in conjunction with dilatation and curettage where the posterior lip of the cervix is much elongated. Many cases of congenital antelexion, with retrocession of the uterus, can be improved by a shortening of the round ligaments and amputation of the cervix if it be markedly elongated.

The treatment of retrodeviations of the uterus is either mechanical, i. e., with pessary, or operative.

The author believes that the field of usefulness of the pessary is a very limited one, because of the many contra-indications to its use. There are certain conditions such as severe kidney or heart-disease, diabetes, etc., which contra-indicate operation and, therefore, must be treated with the pessary. Again, retroversion, immediately following childbirth, may be corrected by a well-fitted pessary.

Of the many operations that have been devised for the cure of retrodisplacements the following are recommended in properly selected cases:

1. Alexander's.
2. Kelly suspension (ventrosuspension).
3. Baldy-Webster's—which the author claims has given him 95 per cent of cures in 400 cases.
4. Gilliam's—with or without its modification by Montgomery.

Regarding prolapsus uteri, the degree of descensus will determine the operative procedure best suited to the case. For slight degrees of prolapse, anterior and posterior colporrhaphy, with or without amputation of the cervix, will often suffice. In women over 45 years of age who are not likely to bear children, the Wertheim (interposition) operation, with high perineorrhaphy, gives the best results. If this operation is not practicable, ventrofixation, with anterior and posterior colporrhaphy, may be done. In women over 60 years of age, in whom the uterus is atrophic, vaginal hysterectomy with closure of the vagina is highly recommended.

HARVEY B. MATTHEWS.

Williams, P. F.: The Causes of Backward Displacement of the Uterus. *Am. J. M. Sc.*, 1915, cl, 264.

The author enumerates some of the factors which influence the production of retrodisplacements of the uterus. The ones most frequently noticed are childbirth, premature interruptions of pregnancy, abortions, and miscarriages. Other causes are pelvic disease with adhesions or tumors of the adnexa or body of the uterus, but the displacement may pass unnoticed for months. Congenital displacements often cause no symptoms until puberty. While it is true that an occasional case is reported in the literature where a fall or strain has been

found to be associated with the production of a retroversion of the uterus, the suspicion must arise that some accompanying pelvic lesion existed or an examination would hardly have been sought before the fall. That retroversion may be caused by trauma is possible, but it is apparent that traumatic retrodisplacement is very rare, and that unless it can be shown that the uterus was in normal position just before the accident or injury it is impossible to prove that the displacement had a traumatic origin.

C. D. HOLMES.

Holmes, T.: Prolapsus Uteri. *Clin. J.*, 1915, xlv, 253.

After a short discussion on the physics of the pelvis and the causes of prolapsus uteri, the author offers the following suggestions regarding the diagnosis and treatment of this condition:

1. The patient should be examined in the Sims, or lithotomy position, and standing.
2. It should be determined, if possible, which structures are mostly responsible for the prolapse.
3. The cases that show a general visceroptosis with large relaxed abdominal walls present added difficulties. Operation in such cases often results in failure.
4. Cases of prolapse in which there exists a distressing cough or constipation should have these symptoms relieved, if possible, before operation.
5. The pessary is applicable to many cases of slight prolapse. The cup and stem pessary is recommended where operation is contra-indicated.
6. Operative treatment consists in amputation of the cervix and anterior and posterior colporrhaphy either singly or in combination with some one of the well-known suspension operations. Ventrofixation, with anterior and posterior colporrhaphy, may be used in selected cases. In complete procidentia the choice of treatment lies between anterior and posterior colporrhaphy combined either with some method of suspension from above or with hysterectomy.

HARVEY B. MATTHEWS.

Montgomery, E. E.: Prolapsus Uteri. *Report Jefferson M. Coll. & Hosp.*, 1915, vi, 61.

After describing the mechanics of the production of prolapsus uteri, the author has detailed in a very concise manner the etiology, symptoms, and diagnosis of the various types of prolapse of the uterus.

The treatment of prolapsus uteri is mechanical and surgical. The mechanical treatment, as the author points out, consists in replacing the uterus and supporting it by means of a suitable pessary. The disadvantage of any mechanical support is that it must be worn continuously. In time it becomes a source of irritation and, therefore, produces ulceration of the vaginal mucosa, which necessitates constant observation. Such a state of affairs is, in the long run, unsatisfactory to both patient and physician.

Surgical measures offer the only permanent cure and even these, unless selected with the utmost

care, are apt to be unsuccessful. There is no procedure, according to the author, that is applicable to every case. There are, however, in every case certain fundamental principles to be kept in mind, viz., (1) decreased weight of the uterus, the decrease being accomplished by curettage and amputation of the cervix; (2) restoration of the pelvic support; and (3) decrease and neutralization of the intra-abdominal pressure.

In lacerations of the pelvic floor with considerable rectocele, a thorough restoration of the posterior vaginal wall, care being taken to bring the levator ani muscles well together, affords adequate support and forms a firm floor for the cervix to rest upon as long as the uterus remains in its normal position. Where there also exists a marked cystocele anterior colporrhaphy should be done. The vaginal portion of the septum should be cut through in a vertical line, with a curved line at its upper end around the anterior surface of the cervix. The bladder is separated from the cervix and anterior surface of each broad ligament (Goffe). The bladder is folded up or sutured to the anterior wall of the uterus at a higher level, after which the redundant vaginal wall is cut away from either side, and the flaps are united with transverse sutures. In such cases, following the climacteric, or when it is advisable to render the patient sterile, the uterus may be interposed after the method of Watkins, Schauta, or Wertheim. A small uterus insures better success with the interposition operation. Where the uterus is large and heavy, Pfannensteil advises amputation of the fundus after it has been interposed and the peritoneum sutured to the posterior surface of the cervix. This procedure should be supplemented by the rectovaginal interposition of the united levator ani muscles to prevent subsequent protrusion of the uterus and bladder.

Occasionally the muscles of the pelvic floor are atrophied and are inadequate for proper support. In such instances the author recommends the procedure of Halban and Tandler, which consists in utilizing, besides the deep fascia, flaps of the gluteus maximi muscles to strengthen the pelvic-floor supports.

There are cases, the author states, in which the retention of the uterus is both unwise and ineffectual and vaginal hysterectomy should be done.

To prevent the subsequent occurrence of a hernia through the vagina, the broad ligaments are brought together in the midline, well under the denuded bladder, and sutured, and the vaginal mucous membrane is brought together. A careful perineorrhaphy should supplement such a procedure.

HARVEY B. MATTHEWS.

Smead, L. F.: The Transposition of the Bladder and Uterus for the Cure of Cystocele and Descensus Uteri. *Tr. Am. Ass. Obst. & Gynec.*, Pittsburgh, 1915, Sept.

The operation of transposition of the bladder and uterus is associated with the names of Dührssen,

Watkins, Schauta, Freund, Mackenrodt, and Wertheim. It is an operation for the cure of cystocele and prolapse which originated from the operation of vaginal fixation.

Vaginal fixation was first done in 1892 for the cure of retroposition. The early operations were rather blind and insecure but later the fixation was very firm and resulted in dystocia. To avoid this dystocia the operations of vesicofixation and vaginal shortening and vaginal fixation of the round and uterosacral ligaments were devised. The broad ligaments, too, were sutured in front of the uterus, and even ventrofixation was done *per vaginam*.

Dührssen did the first transposition operation in 1894, but the technique as used today was brought out by Watkins, Wertheim, Schauta, and Stone in 1899.

The transposition operation is intended for use in sterile women. It is contra-indicated in complete prolapse, especially with atrophy, and is applicable in a smaller number of cases than vaginal hysterectomy. It is a simple, safe, and effective operation in selected cases.

Bladder symptoms are troublesome unless the operation is properly done and the after-care attended to.

The shortening of the uterosacral ligaments should be an important feature of the operation.

The principle of transposition is used in several modern operations including vaginal hysterectomy.

Madill, D. G.: The Alexander-Adams Operation and Its Results. *J. Obst. & Gynec. Brit. Emp.*, 1915, xxvii, 49.

The author regards the Alexander-Adams method of shortening the round ligaments as one of the simplest and most effective in surgery. He applies the procedure to every case of simple mobile retroversion of the uterus in the child-bearing period which is giving rise to symptoms. This would exclude that type of case, mainly congenital, in which there are symptoms, and where it might be said that such is the normal position of the uterus for that particular individual.

All cases where infections and adhesions are present are also excluded, as is a third class of retroversions, mobile and otherwise, where the chief complaint is sterility. A fourth type is the old or emaciated patient, in whom the ligaments are so thin and weak as to be ineffective.

Of 200 patients operated upon by this method in the Rotunda Hospital, there has been but one death, and that from causes unconnected with the operation. In late reports which Madill received from 47 patients out of 80 communicated with, 28 out of 32, or 87 per cent, reported normal menstrual periods; 16, nearly 50 per cent, reported that they were free from vaginal discharge; 14 were improved; no change in 2.

Menstrual pain had been a symptom in 20 patients. Four still have some pain; one was not improved; the rest reported very favorably.

Ninety per cent of the patients had suffered from intermenstrual pain. Of these 26 out of 34, over 75 per cent, were relieved of this symptom. There were no marked changes in the symptom of constipation.

Ninety-six per cent of the patients reported definite improvement in general health.

Of the 47 replying, 18 had become pregnant and had been delivered of healthy children at term. Of 7 examined after confinement the uterus was in good position in 6 and partially retroverted in one. In but 2 patients who did not become pregnant was retroversion found to have recurred.

CAREY CULBERTSON.

Ginn, C.: Uterus Unicornis. *Am. J. Surg.*, 1915, xxix, 301.

While operating upon a 15-year-old patient for removal of a left-sided ovarian cyst, Ginn discovered the following anomalies:

On the left side only a rudimentary broad ligament was found and the fallopian tube was entirely lacking. The round ligament was normal. On the right side no trace of ovary, tube, broad or round ligaments was discovered. The uterus was normal in size but merged into a small egg-shaped cystic swelling at the cervical junction. After the abdomen was closed, a complete atresia of the vagina was found, which the author says is frequently associated with uterus unicornis. This deformity necessitated a second laparotomy, and the uterus was then drained of 300 ccm. of tarry blood, and a second hysterectomy performed. Only the left ovarian and uterine arteries were encountered and the latter sprang from the external iliac and entered the uterus on the anterior surface at about the median line. Hysterectomy should be performed for the relief of hæmatometra uterus unicornis associated with atresia vaginalis.

W. H. CARY.

McEwan, J. S.: Uterus Duplex; Report of a Case. *J. Fla. M. Ass.*, 1915, ii, 45.

McEwan reports a case of double uterus in a woman 24 years old who had had three miscarriages within three years. Following the last miscarriage she was curetted and had a trachelorrhaphy done upon her cervix; all of which was done for irregular menstruation with more or less persistent metrorrhagia. Six weeks following this operation, the author, upon examination, found a double cervix bleeding from one side, the other side showing the earmarks of an old trachelorrhaphy. There were two distinct pelvic tumors, one to the left and one to the right of the median line. The diagnosis was uterus duplex.

Curettage of the bleeding from the left uterus showed an incomplete abortion. The abdomen was opened and the right uterus removed; its tube and the round and broad ligaments were attached to the left uterus. This left the left uterus nearly in the midline and in very good position. Both ovaries were left *in situ*.

HARVEY B. MATTHEWS.

ADNEXAL AND PERIUTERINE CONDITIONS

Wiener, S.: A Study of the Complications of Ovarian Tumors. *Am. J. Obst.*, N. Y., 1915, lxxii, 209.

This study is based on 240 consecutive operations for ovarian tumor performed at the Mount Sinai Hospital; as there were bilateral tumors in 29 cases, there were 269 tumors in all.

Torsion was by far the most frequent complication. In the series it was encountered 33 times, or 12.26 per cent. As to the variety of the tumors there were 16 cystadenomata, 10 dermoids, 3 papillary cystadenomata, 2 multilocular pseudo-mucinous cystadenomata, 1 fibromata, and 1 fibroma-sarcoma.

There were 5 cases of rupture of the cyst wall in the series: 2 serous cystadenomata, 2 pseudomucinous cystadenomata, and 1 corpus luteum cyst. In none of these was there any distinct history of trauma as an etiological factor.

There were 6 cases of infected cysts, 2.23 per cent. There was one case of streptococcus infection, one mixed infection of streptococcus pyogenes and staphylococcus albus, one case of typhoid infection; in one case the culture showed no growth, and in two cases the organisms were unidentified. Many authors lay stress on the fact that the majority of the infections occur in dermoids. In this series there were two dermoids, two serous cystadenomata, one corpus luteum cyst, and one multilocular pseudomucinous cyst.

There were 5 cases of malignant degeneration of benign growths; three times there were squamous-celled carcinomata developing in dermoid cysts; once a papillary adenocarcinoma developing in a serous cystadenoma; and once an adenocarcinoma developing in a pseudomucinous cystadenoma.

There were 11 operations for ovarian tumor complicated by pregnancy. Only two of these were followed by miscarriage.

In 23 cases there was considerable transudate in the peritoneal cavity. Eleven times ascites (mostly blood tinged) was found with carcinomata, once with an uncomplicated papillary cystadenomata; five times with tumors with a twisted pedicle (one fibrosarcoma, two papillary cystadenomata, one simple cystadenomata, one multilocular, pseudomucinous cystadenomata); once with an infected dermoid cyst; and three times with simple uncomplicated fibromata. It has long been known that ascites occurs very frequently with uncomplicated ovarian fibroids, and in this series it was present in three out of four.

Miscellaneous complications were:

Uterine fibroids.....	4 cases
Chronic metritis or "fibrosis uteri".....	3 cases
Retroflexion.....	2 cases
Hydrosalpinx.....	5 cases
Gonorrhœal salpingitis (chronic).....	4 cases
Pyosalpinx.....	2 cases
Incomplete abortion.....	1 case
Ectopic gestation.....	2 cases

In this series of cases there were only three deaths.

C. H. DAVIS.

Parsonnet, V.: Early Cystic Degeneration of the Ovary. *J. M. Soc. N. J.*, 1915, xii, 379.

The author calls attention to the fact that the ovary is normally subject to a great deal of trauma in the process of ovulation, and it can reasonably be expected to be often abnormally scarred and cystic. He suggests that many cases of hysteria, etc., may be due to nothing more than abnormally functioning polycystic ovaries, these cases often being completely relieved by the removal of most of the ovarian tissue.

C. D. HOLMES.

Grant, H. H.: Congenital Absence of Left Ovary and Fallopian Tube. *Am. J. Surg.*, 1915, xxix, 307.

The author gives an extensive review of the literature on this subject and reports a case.

An exploratory laparotomy was performed on a woman twenty-four years old, who had menstruated normally since she was fourteen; she was the mother of one child and had had no other operations. She presented decided indications of right tubal disease or of appendicitis. Examination disclosed a chronic appendicitis and a cystic right ovary three times its normal size. After carefully examining the left side, a stump of a tube an inch and a half long with no vestige of an ovary was found. The outer extremity of the tubal stump was closed in an oblique manner. The corresponding uterine cornu was normal, as was also the remains of the tube which had the usual attachments to the broad ligament. The appendix and two-thirds of the right ovary were removed. The patient made an uneventful recovery and has remained perfectly well since.

C. D. HOLMES.

Heineck, A. P.: Study of Hernias of the Ovary, of the Fallopian Tube, and of the Ovary and Fallopian Tube. *Ellingwood's Therap.*, Chicago, 1915, ix, 267.

The author formulates some conclusions based upon a study of the literature of this subject as well as upon his own personal experience concerning that type of external hernia in which the hernial sac contains some part or parts of the female internal genitalia, with or without some other abdominal viscus or viscera.

1. The fallopian tube, the ovary, or both may be partly or completely herniated.

2. The sac may contain only the above structures or in addition the appendix, Meckel's diverticulum, omentum, urinary bladder, a loop of either large or small intestine, and a rudimentary or fully developed uterus.

3. These hernias may be congenital or acquired, may be alone or may exist with other types of hernias.

4. They may rather rarely coexist with underdevelopment, absence, or some other pathological condition of the genitalia or other abdominal viscera.

5. No age, race, or social condition is immune from this condition.

6. This condition may be bilateral or not, reducible or irreducible, strangulated, etc., and it

does not necessarily interfere with gestation and parturition.

7. The etiology of hernias of the uterine appendages is that of hernias in general.

8. Truss treatment is unsatisfactory.

9. After the second year of life spontaneous cure of this condition is rare.

10. At operation the herniated organs should be removed if they are pathological. C. D. HOLMES.

Jong, L. de: Tuberculosis of the Adnexa (Tuberculose annexielle). *Rev. de la tuberculose*, 1915, xi, 328.

De Jong discusses the frequency, the pathological anatomy, and the symptomatology of tuberculosis of the adnexa. The difficulty in diagnosis lies in distinguishing it from ordinary inflammation of the adnexa. None of the classical signs given for distinguishing it, such as slow evolution, fever, and the fact that it is bilateral, is of any real value. The general condition may be bad, but in some cases it is good. The patient's family history should be studied and a physical examination made for tuberculous foci elsewhere in the body. When inflammation of the adnexa develops in a virgin, if there is no gonorrhœa or puerperal infection to account for it, tuberculosis should be suspected.

A repetition of attacks of pelvic peritonitis at variable intervals is a good sign of the tuberculous nature of the disease. The most frequent error is to diagnose a cold abscess of the tube as an ovarian cyst; but tuberculous salpingitis is generally bilateral, and its form is not so spherical. In extra-uterine pregnancy the uterus is hypertrophied, but in some cases the differential diagnosis is difficult. Tuberculous salpingitis is accompanied by fever, but hæmatocele may be also.

The prognosis is bad if untreated; the patients succumb to pulmonary or peritoneal tuberculosis, often after a long period of cachexia, if intestinal occlusion does not cause sudden death. Medical treatment alone is generally ineffectual, but Ollivier reports 73 recoveries in 80 cases treated surgically. Operation is not contra-indicated by another tuberculous focus, for sometimes the removal of the principal seat of the disease causes improvement in a pulmonary lesion, for instance. But operation should not be performed if there is an advanced pulmonary lesion or pleurisy. Acute peritoneal symptoms are also a contra-indication. Total hysterectomy is the operation of choice in the majority of cases. There are three types of conservative operation: unilateral castration, double salpingectomy with preservation of one or both ovaries, and double removal of the adnexa with preservation of the uterus; but these should be reserved for torpid forms of tuberculosis, such as cold abscess of the tubes and tuberculous hydrosalpinx; in other cases conservative treatment is dangerous and has no advantages. Tubercular vaccines and heliotherapy have been recommended by various authors.

A. Goss.

Goldstine, M. T.: Observations on the Operative Treatment of Salpingitis. *Surg., Gynec. & Obst.*, 1915, xxi, 239.

The author's report comprises the operative treatment in a series of 328 cases. The etiological factor in 197 cases was the gonococcus, the puerperal origin in 45, other infective organisms in the remaining cases.

Pathologically the series is classified as follows: (1) chronic inflammation of the tubes and ovaries without pus formation; (2) cases of hydrosalpinx; (3) cases in which the tubes are bulbous; (4) pyosalpinx; (5) typical tubo-ovarian abscess.

Much stress is placed upon the part played by adhesions to contiguous structures and the methods of dealing with them at the beginning of the operation.

From the operative standpoint the series is divided into two groups: (1) 161 in which the operation was a panhysterectomy or supravaginal amputation of the fundus; the remaining cases, 167 in all, comprising those in which various operations were performed other than a complete extirpation of the procreative organs.

The author emphasizes the inadvisability of removing a single tube or ovary where undoubtedly the pathology is bilateral and would ultimately lead to a second laparotomy.

In the operative procedure the author emphasizes the importance of an abdominal incision extending down to the pubic bone, the breaking up of all adhesions, and the walling off of the loose intestines by means of a five-yard roll of gauze, and bringing the uterus and appendages as far as possible outside the abdomen. With one double strand of No. 1 catgut, about 30 inches in length, the entire process of ligation and the covering up of the raw surfaces is accomplished, using the so-called modified figure-of-eight suture. In the entire operation only two knots are tied, one after the broad ligaments are ligated and the other at the termination of the covering-up process.

Where drainage is necessary it is established by packing the cul-de-sac with a strip of gauze which is brought out through the vagina by incising the cul-de-sac from below, after the abdomen is closed. In tubercular salpingitis, the operative results have been so disappointing that the author advises against operation. The mortality in the author's series was less than one per cent, death in these cases being due to peritonitis.

Pinkham, E. W.: Pelvic Varicocele. *Am. J. Obst.*, N. Y., 1915, lxxii, 244.

The author finds that the chief symptom complained of by many women seeking advice for so-called female trouble is a persistent, dull, aching pain in the left iliac region. This pain, which is at times barely noticeable, at other times very severe, is in many instances relieved by the recumbent position, is aggravated by standing or walking, and is usually worse during the menstrual period. This symptom

is frequently unassociated with palpable intrapelvic lesions, yet sometimes is associated with a slightly enlarged ovary or a retrodisplaced uterus. That there is always a good reason for physical suffering, is a fact too often overlooked. The author believes that in many cases these symptoms are due to varicocele. He believes it is a mistake to remove or resect an ovary, even though it is a little enlarged or cystic, if there is a varicocele present, since the varicocele is probably the cause of the symptoms. He gives a brief review of the literature and reports 6 cases of varicocele he has operated upon.

C. H. DAVIS.

EXTERNAL GENITALIA

Wade, H. A.: A Method of Repair of the Posterior Wall of the Vagina. *Long Island M. J.*, 1915, ix, 333.

The method of repair of the posterior vaginal wall of the vagina as used by the author has been done 325 times during the past three years. Briefly, this method is as follows:

The mucous membrane lining the posterior wall of the vagina is dissected free from the rectum and the underlying muscles. The torn or relaxed muscles and fascia are brought together with a continuous No. 2 chromic catgut suture, after which the mucous membrane flap is stitched back into place over the repaired muscle and fascia. All sutures are buried. After this procedure has been completed the skin is dissected free from the superficial fascia for a distance of one-eighth of an inch and the wound sealed with from four to six Mitchelin clips, the sharp points of which have been blunted by removing the tips with a pair of scissors. No vulva pads are used.

Other important points emphasized by the author are:

1. The field of operation, both internally and externally, is painted with a 50 per cent solution of the tincture of iodine in alcohol.
2. The interior of the uterus is not curetted, but is invariably swabbed out with iodine (iodinized).
3. If the cervix is very large, the excessive portion is removed. High amputation is rarely, if ever, done.
4. Fresh tears of the vagina are repaired, preferably on the third day after labor.
5. Old tears of the posterior vaginal wall may be repaired by this method after labor at term or after miscarriage or abortion.

HARVEY B. MATTHEWS.

MISCELLANEOUS

Rapin, O. J.: Preparation for Gynecological Operations (De l'utilité des soins préopératoires en gynécologie). *Rev. méd. de la Suisse Rom.*, 1915, xxxv, 389.

The method of preparation for a gynecological operation plays an important part in the results of

the operation. Neglect in apparently minor points may seriously interfere with the success of the intervention. A careful physical examination may save the surgeon disagreeable surprises later. An effort should be made to have the condition of the gastro-intestinal tract as physiological as possible. This is not accomplished by giving drastic purgatives just before the operation, as this causes a tendency to intestinal paralysis after operation. The best way is to give mild purgatives several days before the operation, thus giving the intestine time to regain its normal activity before operation. After the purgation only light and easily digestible foods are given — carbohydrates, fats, fruits, and only a little albumin, and the evening before the operation only liquid is given. These precautions are particularly important in obese patients.

Careful examination of the kidneys should be made, not only for sugar, albumin, and casts, but for permeability by methylene blue. In normal cases the urine is green 20 minutes after the ingestion of methylene blue; if there is any delay it should serve as a warning. To avoid the necessity for catheterization after the operation, the patient is taught to urinate while lying down when she enters the hospital.

The hæmoglobin content of the blood should always be tested, though a low hæmoglobin is not an absolute contra-indication to operation. The author tells of a case in which he operated successfully for myoma of the uterus, though the hæmoglobin was only 25 per cent; another patient had only 20 per cent hæmoglobin, and yet she recovered after a radical Wertheim operation for carcinoma of the uterus. Acute inflammation of the bronchi or lungs is an absolute contra-indication to general anaesthesia; if it is necessary to perform operation under such conditions it should be done under local or spinal anaesthesia; chronic respiratory troubles, however, permit of general anaesthesia.

Rapin has discontinued the use of spinal anaesthesia, except in cases where general anaesthesia is impossible, and he reserves scopolamine-morphine for obstetrical cases. Inhalation anaesthesia is still to be preferred in abdominal operations in gynecology. He gives 0.5 gm. of veronal an hour before operation in nervous patients. The use of opiates is not to be recommended, because it favors intestinal paresis after the operation.

The author gives the details of his aseptic and antiseptic practice and insists on the importance of having only one assistant and one nurse. Self-holding retractors are used, which does away with the necessity for another assistant and thus lessens the chances of infection. Rubber gloves should be used, with cotton gloves over them to make them less slippery. The gloves should be put on dry to avoid maceration of the skin and the formation of a good culture medium for bacteria. The field of operation is painted with 10 per cent iodine, and the patient is covered with a sterile sheet with a hole cut in it to expose the field of operation. A. Goss.

Huggins, R. R.: Anaesthesia in Gynecological Operations. *Tr. Am. Ass. Obst. & Gynec.*, Pittsburgh, 1915, Sept.

The author emphasizes that gaseous drugs should be administered in exact amounts, and this can only be accomplished by a measuring instrument which indicates accurately to the anaesthetist and the operator the percentage of the drug being inhaled. No anaesthetic that will fill all requirements can be applied indiscriminately. Chloroform is fairly safe in the hands of a good anaesthetist. Recent experiments by Levy and others demonstrate that sudden death occurs under light chloroform anaesthesia, due to ventricular fibrillation. A dog given chloroform under the dosimetric system and kept under two hours had an extensive necrosis of the liver, showing that the effect was just the same as when administered by the ordinary drop method. Ether is undoubtedly the safest anaesthesia we have today, so far as danger during administration is concerned, but those who are unprejudiced must admit that many deaths following its use should be charged to its account.

Local anaesthesia is ideal when it may be successfully applied, and fortunately has a wide field. Crile has demonstrated the value of nitrous oxide supplemented by local anaesthesia. The value of Crile's theory, so far as it goes, leads to the consideration of the advisability of blocking the nerves either by injecting the solution into the nerves where they escape from the spinal canal or in selected cases by the use of spinal or lumbar anaesthesia. It seems reasonable that if the technique that partly blocks the nerves is valuable, one that goes to the fountain head, completely blocking the entire nerve supply, must be more so. A careful study of the literature leads to the conclusion that spinal anaesthesia has passed through a very stormy period. Extreme enthusiasm which led to unfortunate results has given way to a sane appreciation of its value when used with caution and full knowledge of its contra-indications. After an experience with spinal anaesthesia covering a period of two years, the author is convinced that it is of great value and that it will eventually find a high place among the methods of anaesthesia, particularly for surgical procedures in the lower abdomen and pelvic cavity. The time has not come, however, when it can be used indiscriminately and by those who are not familiar with the contra-indications. It is highly important to know when not to use it.

Novocaine has been used, a ten per cent solution being employed. Experience is necessary to obtain satisfactory results.

In conclusion, the author states his belief that spinal anaesthesia is the best anaesthetic known today for certain operations in the lower abdomen; that it should be given only after careful study of the patient. Experience indicates that if spinal anaesthesia is not properly employed by one possessing sufficient clinical skill, it may have a large mortality.

There is no form of anæsthesia which is altogether free from danger, either immediate or remote.

There are well-defined contra-indications to the use of all anæsthetics in certain instances and it would seem that we have reached the place where the operator must exercise considerable judgment as to which anæsthetic shall be employed in a given case.

Kehrer, E.: Sacral Anæsthesia, Especially in Gynecological Operations (Erfahrungen über Sakralanästhesie besonders bei gynäkologischen Operationen). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xlii, 95.

The author reports his experience with this method of anæsthesia in 140 cases and gives two excellent illustrations of the technique. He believes the method is adapted, not only for operations on the vulva, vagina, and perineum, but also for all major gynecological operations. To be certain of getting complete high anæsthesia he recommends epidural injections of much larger doses than those recommended by Schlimpert. He often gives 60 ccm. of 1.5 per cent novocaine-sodium-bicarbonate solution, which contains 0.9 gm. novocaine. Schlimpert recommends as the maximum dose 53.3 ccm. of the 1.5 per cent novocaine solution, corresponding to 0.8 gm. novocaine, but Kehrer limits himself to this amount only in case of very weak patients. By increasing the amount of novocaine solution to this extent he gets as good an effect with high extradural anæsthesia as with lumbar anæsthesia, with reference to painlessness and relaxation of the abdominal walls.

Schlimpert recommends injection in the inconvenient knee-elbow position, but Kehrer substitutes for this a lateral position with the back arched and the legs drawn up against the body. If the proper technique is used there are no unpleasant effects. The technique demands practice, however. Fat individuals should not be given sacral anæsthesia. The method is not complicated, as has been claimed. Sacral anæsthesia is not adapted for obstetrical operations. In delivery it overcomes the pain, but relaxes the abdominal muscles so that no pressure is exerted by them, and thus delays delivery.

Histories are given of 16 abdominal and 31 vaginal total extirpations, 12 supravaginal amputations, 50 operations of various kinds, mostly laparotomies, 15 exploratory laparotomies, 5 subcutaneous sym-

physeotomies, and 1 vaginal and 1 classical cesarean section.

A. Goss.

Funk, E. H., and Ellis, A. G.: A Case of Periodic Bleeding from the Mouth (Vicarious Menstruation) Associated with Hypoplasia of Uterus and Tubes and Aplasia of Ovaries and Mammary Glands. *Report Jefferson M. Coll. & Hosp.*, 1915, vi, 136.

A case is reported of a woman who died at 57 years of age from acute nephritis. Menses began at 16, but were very scanty, and following scarlet fever at 18 the menses stopped and never reappeared. They were replaced by periodical bleeding from the mouth, which occurred every twenty-eight or twenty-nine days quite regularly until the forty-seventh year, when it stopped. The bleeding came from the mouth unassociated with cough or epistaxis, and, during the period of its occurrence, blood was apparent for several days on the teeth, lips, and mucous membrane of the mouth. The patient was totally void of sexual desire.

At autopsy the uterus was found to be infantile. The cornua were relatively large. There was no macroscopic ovarian tissue on either side, there being at the site of each a few small nodular masses having the consistency of fibrous tissue. Sections of the tissue at the sites of the ovaries were fibrofatty in structure. In the right one were areas of fibrous tissue that were cellular and recent in formation. In those from the right side were a few irregular spaces lined by low columnar epithelium. One of these spaces was quite large and the lumen was partly filled by poorly staining masses of granular and hyaline debris. There was no recognizable ovarian tissue on either side.

The uterine wall was a thin band of tissue, mostly fibrous in type. This for the most part was loosely arranged in the form of narrow bands suggestive of the arrangement of muscle-fibers. In a few of these bands there were faint yellowish areas (van Gieson) with nuclei characteristic of muscle, but such areas were few in number. The fibrous tissue was fairly cellular. The endometrium was a narrow cellular fibrous zone with occasionally a tubule lined by columnar epithelial cells. Only occasional points showed superficial epithelium.

A review of the literature is given, followed by a discussion of various phases of vicarious menstruation.

EDWARD L. CORNELL.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Macfarlane, W. D.: Extra-uterine Gestation with Intra-uterine Pregnancy; Operation; Pregnancy Proceeding to Term. *Glasgow M. J.*, 1915, lxxxiv, 109.

Macfarlane reports a second case of extra-uterine gestation complicating intra-uterine pregnancy.

Forty days after her last menstruation the patient was admitted to the hospital with a tender semifluctuant mass in the pouch of Douglas. The cervix was soft and the uterus enlarged. Exploratory laparotomy revealed a large quantity of blood in the abdomen, with an incomplete right tubal abortion. As both tubes and ovaries were diseased they were removed. The pregnancy was undisturbed and proceeded to term.

DAN L. BORDEN.

Snodgrass, W. A.: Ectopic Gestation. *J. Ark. M. Soc.*, 1915, xii, 65.

Snodgrass reports 33 cases of ectopic gestation, 7 of which have subsequently passed through normal labors. Of these 7, 1 has had three children, 2 have had two children, and 4 have each borne one normal child. In the last 18 cases of this series, 5 were diagnosed and operated upon before rupture; 16 recovered; 2 died, one of primary shock and the other from septic infection.

The diagnosis of ectopic gestation having been made, the first duty is to the mother, as the probability of saving the child is so small under the best conditions that immediate operation should be advised.

The author has never found in his series a single case where the fetus would have matured to be removed by abdominal section, with a viable child resulting.

DAN L. BORDEN.

Seedorf, M.: A Case of Ruptured Ovarian Pregnancy (Ein Fall von geborstener Ovarialgravidität). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xlii, 30.

A detailed case history is given of a case of ruptured ovarian pregnancy, with a picture of a section through the boundary between the rupture and the ovary. It was undoubtedly a case that had developed inside the ovary and, by its rupture, necessitated operation. As to its causation, the author assumes that the ovum was incompletely discharged from the follicle. It was held back in a fold at the line of rupture of the follicle and there became impregnated. This is indicated by its superficial position, and the condition of the corpus luteum, which was intact throughout. If the ovum had developed inside the follicle there would have

been a greater or less defect in the corpus luteum, or possibly a capsule of lutein tissue around the whole ovum. After it was fertilized the ovum sank into the cleft formed by the ruptured follicle and gradually this developed into a corpus luteum. The growing ovum destroyed the superficial layer of lutein cells. There was no actual formation of a decidua, but a decidual reaction was unquestionably demonstrated in the mother cells lying next to the ovum. The author could find no fetus, and its fate is not known.

A. GOSS.

Miller, J. R.: The Relation of Albuminuric Retinitis to the Toxæmias of Pregnancy. *Am. J. Obst.*, N. Y., 1915, lxxii, 253.

The author discusses the relation of albuminuric retinitis to eclampsia and nephritic toxæmia, with a brief review of the literature.

The symptoms of retinitis are as follows: Frontal headache, malaise, vomiting, flashes of light or black specks before the eyes, a halo about lights, a transient evening dimness of vision, which is occasionally one of the first symptoms, and a gradual loss of vision, even amounting to amaurosis.

The diagnosis is simple when the patient is not in coma or having convulsions; mydriatics should always be used, and the electric ophthalmoscope is almost indispensable for ward work.

From his study and observation of cases the author believes that when retinitis is present the kidney lesion is primary and more or less extensive in character; little can be expected from conservative treatment; and radical procedure is indicated.

He gives a brief report of 12 cases seen in the clinics at Vienna and Johns Hopkins, giving the eye findings and the autopsy records of 5 cases.

In conclusion he says that it has been his experience that albuminuric retinitis of pregnancy affords evidence strongly indicative of primary nephritis, though it is not always present in cases of nephritic toxæmia.

The retinoscopic examination, when positive, makes possible the making of an early diagnosis of the underlying kidney condition, which at the present time is sometimes impossible without autopsy findings or extended observations.

With this in view a more accurate prognosis can be made with regard to convalescence and future pregnancies.

C. H. DAVIS.

Brown, W. M.: Eclampsia and Its Treatment. *Tr. Am. Ass. Obst. & Gynec.*, Pittsburgh, 1915, Sept.

This subject has in the past been warmly discussed, but for the most part from only two points of view. Peterson, Halbertsma, and Bumm have

advocated the surgical method, especially the use of vaginal caesarean section, teaching that a woman in antepartum eclampsia should be delivered immediately after the first convulsion. Zinke, on the other hand, agreeing with Stroganoff and others, has offered strong arguments for the medical, or expectant, manner of treatment. The statistics prepared by Peterson and Zinke, in support of their positions, prove inconclusive. The author believes, therefore, that it is the all-important middle ground, untouched in such a discussion between radicals, that must be turned to for light upon the subject. The really great question seems to be: How can the principles of rational therapeutics, which must embrace the prophylactic, the curative, and the restorative, be best applied to the treatment of puerperal eclampsia? The answer cannot be unequivocal, but, even with our present inadequate knowledge of the pathology and symptoms of this condition, it is evident that some of our earlier ideas must be changed, and, in many ways, our method of attack modified, for example, in the use of chloroform.

Specific preventive measures cannot be used, because the particular toxin which causes this condition is unknown. Generally speaking, prophylaxis consists in maintaining all physiological functions at their highest point of efficiency, with special attention to digestion and elimination. Muscular exercise should also be supervised, for muscular action gives rise to fatigue toxin, which, in sufficient amount, will produce more or less severe reactions.

It is impossible to formulate a set of rules for the treatment of active eclampsia. In general, two things are known: (1) the patient is suffering from a poisoned blood stream. (2) the poison, character unknown, is associated with the pregnant condition and arises from it.

The two aims, thus indicated, for the treatment are: (1) removal of the cause, and (2) neutralization of the toxin and its effects.

The evacuation of the uterus is a measure which must be used with great caution, and never before the patient has had the benefit of careful preliminary treatment. Too much emphasis cannot be laid on the importance of prenatal supervision. As far as the safety of the child is concerned, and this should certainly be considered, it is difficult to decide whether the danger of intra-uterine asphyxia offsets the dangers in an operative delivery.

The first and most serious effort should be to eliminate as much toxin as possible from the circulation. This is done by thorough cleansing of the circulation by catharsis, hot packs, colon irrigations, or by bleedings as long as a proper circulatory volume is maintained.

Attention is here called to work done by Graham of Chicago with the agent which causes the focal necrosis and hæmorrhage in the liver. He has shown that various toxic agents, such as chloroform, iodoform, and bromoform, in the process of dissociation, produce a corresponding halogen acid

which in turn causes the liver change found in puerperal and other eclampsias. In further tests he has been able to control or inhibit the changes in the liver by the use of sodium bicarbonate in salt solution. This is suggestive of the success that may attend the intravenous use of Fischer's solution in these masses, and also suggests an answer to the questions asked by the obstetrician: Is the cellular lysis in the liver the final expression of one agent? Is it caused by a number of different ones? Do these various agents, whatever their origin, fuse to a single substance in their breakdown which becomes the direct agent of destruction? Do these several toxins have a similar action which finally results in the liver changes? There is great need for the continued observation of these cases after they have recovered from acute illness. It has been found that most of them have a pronounced hæmolysis and a rather persistent anæmia, with some renal disturbance, and should be kept under surveillance for some months.

Parke, W. E.: The Cæsarean Operation; Its Wider Application. *Am. J. Obst.*, N. Y., 1915, lxxii, 281.

The author traces in a general way the development of the cæsarean operation from one so dangerous that it was rarely performed on the live woman because of its tremendous mortality, to its present relative safety and frequent usage. The author reports 9 cases he has operated upon during the past year:

1. Flat pelvis; section, resulting in a live baby and the recovery of the mother.
2. Nephritis with marked œdema and cough; section, resulted in a live baby and the recovery of the mother.
3. Eclampsia; section, resulting in a stillborn baby and the recovery of the mother.
4. Eclampsia; section, resulting in a live baby and the recovery of the mother.
5. Nephritis, cardiac dilatation, and œdema of the lungs; section, followed by the death of the mother and baby.
6. Placenta prævia; section, followed by recovery of the mother and the death of the baby.
7. Contracted pelvis; section, resulting in recovery of the mother and death of the baby.
8. Contracted pelvis; section, resulting in a live baby and the recovery of the mother.
9. Flat and contracted pelvis; section, resulting in a live baby and the recovery of the mother.

In conclusion he adds: "Whether the morbidity and mortality following this radical method of dealing with these cases is justified, only the accumulated experience of a large number of operations and different operators will show, and toward that end this report is a humble contribution." C. H. DAVIS.

Kivlin, C. F.: Cæsarean Section. *Med. Rec.*, 1915, lxxxviii, 358.

The author uses the lower route for cæsarean section; that is, an incision is made between the um-

bilicus and the pubes. All that is necessary and essential should be attended to so that the abdominal contents shall not be soiled, or at least soiled as little as possible. The more careful the execution the greater safety there is from any untoward sequelæ; in fact, the same precautions should be taken as though an infected or a pus case were being dealt with, and a pregnant uterus should be handled with this idea in mind.

Asa B. Davis is an ardent advocate of the upper zone for his cæsarean work. He is, without question, an authority on cæsarean section and his advice should be given a great deal of logical respect, but the author cannot follow him because he believes that the lower route has no disadvantages that are not inherent in the upper route, and it has the additional advantage that if one desires to do more than one section, as for instance, the removal of the uterus, one is in the best possible position to do so; as a matter of fact, it would be a safe procedure to remove the uterus only if, at the time, it could be determined that it was infected. It also is a positive indication in many cæsarean sections, which makes it a doubly hazardous operation, for in addition to the shock there is danger from the weakened condition resulting from the absorption previous to the operation. Some operators attempt to lessen the force of the infecting agent by previously washing out the uterus. The author can see no advantage in so doing as it is impossible to wash away an infection in any location, and the attempt to wash out a pregnant uterus, with its many places for foci of infection, is futile, as it is utterly impossible to localize the infection. If the fact of infection can be determined before operation, then recourse may be had to one of the stock vaccines. The stimulating effect of the agent, no matter what the antibody is, upon the general system is advantageous. If the infecting agent or agents can be isolated and there is time to make an autogenous vaccine, the result will be all the more pronounced.

A small or comparatively small incision should be made, but at the same time it should be large enough to permit of rapid and easy work. The abdomen is opened with one sweep of the knife and an incision made in the anterior portion of the uterus from the fundus down, this incision being large enough to permit delivery of the child. The child is delivered, the cord clamped, tied, and cut, and the placenta and membranes are delivered at the same time. A dose of ergotin and pituitrin is then given. The uterus contracting, the clots are removed and the incision is closed with a continuous chromicized catgut. Starting from the lower angle, the suture pierces all the coats of the uterus except the endometrium, and is continuous to the top. When the upper angle is reached and sewed, the same suture is continued down, including only the serous layer so as to cover over the rough edges of the cut surface of the uterus. This suture is continued down again to the lower angle of the incision and is tied with the opposite end of the suture

which has been left long for that purpose; this leaves the uterus smooth, with little or no surface that might become adherent to any surrounding structures. The abdomen is then closed without any buried knots.

EDWARD L. CORNELL.

Howat, W. F.: The Indications for Cæsarean Section. *J. Indiana St. M. Ass.*, 1915, viii, 369.

The author has given considerable attention to the history of the operation and to the enumeration of the indications for its employment, as stated by authorities both ancient and modern.

The antiquity of the operation is much in dispute. However, we are told that the Roman law of Numa Pompilius, 715 B. C., made its performance compulsory in case of the death of a pregnant woman. Guy de Chauliac is probably the first medical writer to make mention of the operation, the reference appearing in his *Chirurgia* in 1363 A.D.

In 1610 in Wittenberg, Traurmann performed the first well-authenticated cæsarean section. From this time on references to the operation are more numerous, and there are authentic reports of the operation having been performed in a very rude fashion by the natives of Africa during the eighteenth century.

Howat sets forth the indications for the operation as he sees them: (1) disproportion between child and birth canal; (2) pelvic and abdominal tumors; (3) physiological incompetence for labor; (4) habitual death of the child in previous labors; (5) stenosis of the cervix, vaginal atresia, or cervical or vaginal carcinoma; (6) fixation of the uterus—vaginal fixation or sometimes ventrosuspension; (7) eclampsia; (8) abnormal presentations; (9) double uterus; (10) in placenta prævia if the bleeding is profuse and at or near term, the placenta central, the os but slightly dilated, the mother a primipara, the pelvis contracted or obstructed by pathological conditions; (11) uterine inertia; (12) tetanic contractions of the uterus which may call for the operation as a means of saving the life of the child; (13) threatened uterine rupture if the mother be in fair shape and the child alive; (14) where a woman for any reason has had a previous cæsarean section.

C. D. HOLMES.

Benthin, W.: Treatment of Febrile Abortion. (Zur Kritik der Behandlung des febrilen Abortes). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xlii, 162.

The author reviews the articles that have appeared on Winter's conservative treatment of febrile abortion. He believes that the advocates of the active treatment have not had as good results as those who use the expectant treatment. In support of this opinion he cites the statistics he has collected from the literature, showing a morbidity of 9.8 per cent and a mortality of 0.8 per cent under conservative treatment, while the figures for the active treatment show a morbidity of 29 per cent and a mortality of 9.8 per cent. Most striking is the mortality with hæmolytic streptococci: 31.2

per cent with active treatment and zero with conservative. The strictly conservative treatment is reserved for the cases showing hæmolytic streptococci. When the uterus is emptied it should always be done with the finger, not with a curette. Benthin urges that all adherents of the active treatment at least give conservative treatment a trial before they pass final judgment on the question.

A. Goss.

Schweitzer, B.: Causes, Prevention, and Treatment of Artificial Perforation of the Uterus in Abortion (Entstehung, Verhütung, und Behandlung der artifiziiellen Uterusperforationen bei Abort). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xlii, 148.

The author reviews the perforations of the uterus occurring during surgical intervention for the past five years, among them 8 cases from the Leipzig Gynecological Clinic. The mortality of these 105 cases from the literature was over 25 per cent.

The cause of perforation in abortion may be a change in consistency of the uterine walls, without histological alteration, so that an instrument easily penetrates the wall without the use of force; therefore, the most extreme care is demanded in any manipulation of the pregnant uterus. The perforation of the uterus is in almost all cases by instruments, for which, however, the instruments are not to be blamed, but their improper use. A careful obstetrician cannot fail to know the moment the uterus is perforated. To avoid perforation the first requisite is to see that the cervix is sufficiently dilated; after that the uterus should be emptied with the finger.

As to treatment the Leipzig Gynecological Clinic gives the following recommendations: Expectant treatment can only be given when the perforation is small, when there is no suspicion of infection and no intestinal injury, and when the uterus is completely empty. If there is a large perforation with a curette or other instrument, so that it is impossible to be sure that there are no other injuries, and a possibility of infection of the contents of the uterus, laparotomy is indicated, and if infection has begun, total extirpation of the uterus is indicated. If the uterus is aseptic and the opening small, it may be sutured. The most essential thing is to make a diagnosis of perforation early and place the patient as quickly as possible in the proper hands for treatment.

A. Goss.

McCarthy, D. J.: Psychoses and Neuroses of Pregnancy and the Puerperium. *Am. J. Obst.*, N. Y., 1915, lxxii, 269.

The author gives an interesting review of the literature with valuable statistics from various clinics, and in conclusion gives the following suggestions regarding treatment:

The treatment of the mental conditions in puerperal insanity is largely one of correct diagnosis and the removal of the causative factors. The statistics from the Philadelphia Hospital indicate

in recent years a very marked tendency to reduction in puerperal insanity. This may be attributed to better practice in obstetrics, to more scientific care of the pregnant woman, or discovery of the underlying causative factors, together with a complete knowledge of the pelvic conditions following pregnancy. The treatment will naturally be local treatment of the trouble and not of the mental state.

Proper treatment instituted early and with the attention directed to the nervous and physical ailments concerned give better results than if the patient is transferred to an institution. The author has removed such cases to their own homes, with prompt and beneficial results. Better even than this method of treatment is the proper treatment of the patient in a well directed hospital where the treatment is such as would be given any person treated for other diseases. A sane handling of mental conditions will never obtain until general hospitals have psychopathic wards for the study and treatment of acute mental conditions.

C. H. DAVIS.

Bauch, B.: Disturbance of Liver Function During Pregnancy (Zur Frage der Leberfunktionsstörung während der Gravidität). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xlii, 258.

The question of whether pregnancy causes disturbances of liver function has never been satisfactorily settled. The demonstration of a simple or alimentary glycosuria during pregnancy does not settle it. The author administered galactose to healthy pregnant women and examined the urine and blood for sugar. Of 22 pregnant women, who were given 40 gm. galactose, 14, or 63 per cent, excreted no sugar, or only traces in the urine; 8 of them excreted sugar, but not more than non-pregnant women after being fed sugar; therefore the results could not be regarded as pathological. The sugar content of the blood was not higher than that found in non-pregnant women and was only slightly increased by the administration of galactose. One case with mild symptoms of pregnancy toxemia had hyperglycemia before the galactose was given, and the amount increased decidedly afterward. His experiments did not demonstrate any injury of liver function by pregnancy.

A. Goss.

Doege, K. W.: The Thyroid in Pregnancy. *Wis. M. J.*, 1915, xiv, 49.

In spite of the attention the subject has received during the last twenty-five years there is still a great difference of opinion as to the function of the thyroid gland. The most acceptable theory is that the secretion has some relation to normal metabolism and the next most acceptable is that the thyroid secretion eliminates certain toxins from the system or develops a toxin itself. Either theory serves to explain the phenomena of the enlarged thyroid of the girl entering on maturity and the congested thyroid of the pregnant woman, which are commonly observed by practitioners. In the first case the

sudden demand of the ripening process would require increased thyroid secretion and lead to consequent enlargement of the gland, and the double metabolism of the pregnant woman would make the same demand. The second theory applies equally well. For the increased metabolism of rapid sexual growth and the double growth of pregnancy mean added waste and formation of toxins which may be neutralized by increased thyroid secretion which results in hypertrophy and congestion of the gland. However, as all the organs of the body suffer change and enlargement during pregnancy, thyroid enlargement need not be regarded as a special feature safeguarding pregnancy.

From the statistics of Markoe and Wing, based on 1,586 cases, only 6 per cent of all cases of hypertrophy dated their enlargement as beginning during pregnancy. Graef of Halle in 654 cases found 9 per cent in which enlargement began during pregnancy. So statistics demonstrate that in the great number of cases the normal thyroid is fully equal to the task of meeting the increased demands. The same statistics show that the effect of gestation on glands already diseased is more pronounced and frequent.

In the light of the above statistics, showing that enlargement of the normal gland is not as universal as has been assumed, it seems there need be no undue fear of inducing a serious toxæmia of pregnancy if, in the presence of a goiter, measures should be taken to diminish the size of the goiter or to diminish its secretion.

A case is cited of a woman, 33 years old, in her eighth pregnancy, with an immense vascular goiter, resulting in severe dyspnoea. The goiter had appeared after the birth of the second child and always increased during pregnancy and was accompanied by dyspnoea and apnoea to such an extent that, in the seventh pregnancy, labor had been prolonged several days and instruments had to be used without anæsthesia. As the same conditions threatened in the eighth pregnancy it was decided to remove the goiter under anæsthesia. She made an uninterrupted recovery, and was confined normally six weeks later. The operation had no deleterious effect.

The behavior of the thyroid gland in Graves' disease is variable. Pregnancy cannot be considered as specifically injurious, but it needs careful watching, rest, and sedative treatment. Some cases are improved.

The relation of the thyroid to the physiology and pathology of pregnancy is so diverse that no deductions can be drawn.

The conclusions are as follows:

1. The influence of pregnancy on the normal thyroid gland is noticeable by its enlargement in about 8 per cent of cases.

2. Diseased thyroids, preëxisting goiters, are most decidedly aggravated by pregnancy.

3. Strumectomy is indicated when obstruction to breathing arises.

4. The relation of the thyroid gland to the toxæmia of pregnancy is understood but little, and treatment thus far has been unsuccessful.

5. Graves' disease is more aggravated than helped by pregnancy.

W. H. CARY.

Unterberger, F.: Ovariectomy During Pregnancy (Ovariectomie in der Schwangerschaft). *Deutsche med. Wchnschr.*, 1915, xli, 1036.

Unterberger describes 8 cases in which he performed ovariectomy during pregnancy; in 6 of the cases the operation was unilateral, in one it was bilateral, and once a parovarian cyst was removed, leaving both adnexæ intact. In the 2 latter cases abortion occurred, while in the remaining 6 the pregnancy continued to term. The abortions, however, were due, not to the nature of the operation in these cases, but to the fact that it was early in pregnancy — the second or third month. Three times the operation was indicated for torsion of the pedicle, three times because the tumors were causing severe symptoms, once because the cyst was situated between the broad ligaments, and once because the patient had always aborted before.

Abortion does not necessarily take place after bilateral ovariectomy; several cases have been reported in which pregnancy continued to term. Ovariectomy is not always indicated in pregnancy when there is a tumor of the ovary. Torsion of the pedicle is generally the thing that forces operation. If the tumor is intraligamentary, or if it is incarcerated in the pelvic inlet, operation must be performed during pregnancy or an abdominal delivery undertaken. If ovariectomy is indicated during pregnancy it should be delayed if possible till the third or fourth lunar month; otherwise abortion is apt to occur.

A. Goss.

Reder, F.: Surgical Operations During the Pregnant State. *Tr. Am. Ass. Obst. & Gynec.*, Pittsburgh, 1915, Sept.

The performing of a surgical operation on a pregnant woman is fraught with an anxious uncertainty, not that the operation might prove unsuccessful, but from the fear of interrupting pregnancy. It is only logical to reason that the organism has quite enough to do without being subjected to the additional strain of a surgical operation. Furthermore, there is nothing absolute in judging the immunity of a uterus to abortion in any stage of gestation.

High temperatures caused by the presence of pus usually engender a toxæmia that is fatal to the fœtus in a few days. It is the most formidable pathologic factor to be reckoned with. Even in the face of a pus collection, should the fœtus escape death and pregnancy go on uninterrupted, the consequences of a suppurative process in the pelvic zone may result in the formation of adhesions to the uterus of sufficient strength to seriously impede an otherwise normal labor.

Although pregnancy does not in any way pre-

dispose to appendicitis, there is no doubt that it has its influence on a dormant appendix lesion and causes it to assume an activity that may rapidly kindle into a well-defined attack. This may be explained upon the ground that the increased blood supply to the pelvic viscera, physiologic during pregnancy, may embarrass an old damaged appendix.

An increased blood supply that is constant to an invalidated organ results in an œdema. As a consequence, a vascular stasis follows and gangrene and perforation may occur in a surprisingly short time.

Operative intervention for appendicitis during pregnancy is not one of election, and should be performed regardless of any accepted ruling as to the most propitious time for operation during pregnancy. It is axiomatic that operations of choice on a pregnant woman should not be performed at a time when she would be menstruating if not pregnant; that is, the best time to operate would be when there is the least amount of uterine excitability. It is well to bear in mind that sedatives, and even narcotics, freely administered before and after the operation, will prove very beneficial in controlling any excitability of a reflex character.

Of 5 cases of appendicitis occurring during the pregnant state, between the fourth and the seventh month, where pus was encountered, 3 aborted — all within five days. The other 2 went to full term, and had normal labors.

The author states that in his experience with tumors complicating pregnancy, he has had some interesting surprises, one of the greatest of which was in a case of pregnancy where the complicating myoma grew with such rapidity that he felt justified in recommending an operation for its removal. The request was promptly refused, and the woman went to full term, and was delivered without accident, excepting a moderately severe postpartum hæmorrhage. Within six months after labor, this tumor, which had attained the size of a man's head during pregnancy, had atrophied to the size of an orange.

Another surprise was that of a primipara who noticed, when in the fifth month of pregnancy, three tumors, each the size of a goose egg, on the right side of her abdomen. The tumors were sessile and intimately connected with the uterus. Although the patient was greatly excited over the discovery, her anxiety was assuaged and she went to full term. She was sent to a hospital in due time and all preparations for every conceivable accident that might happen during labor were made. Labor began at 11 a.m., and the patient delivered herself unassisted two hours later without the slightest accident, the author arriving in time to deliver the placenta.

These two cases furnished splendid food for thought and disarmed the author of any surgical aggressiveness in future cases with which he came in contact.

A submucous fibroid is an exceedingly bad

fibroid and usually interrupts gestation by hæmorrhage.

Cervical myomata are troublesome tumors. They grow rapidly and usually prove a positive bar to delivery. Vaginal enucleation should be done at the earliest possible time. An operation on a cervical myoma is often attended with severe hæmorrhage that may prove very obstinate, and may cause the surgeon to militate the incurred risk with more radical measures.

Cases of myomata complicating pregnancy coming under the author's care were 9 subperitoneal tumors, all sessile. Four cases were subjected to myomectomy on account of rapid growth and incarceration between the third and fifth months, not abortion. Of the other 5 cases, 3 went to full term, and 2 miscarried at the fifth and seventh month respectively; all recovered. In the 3 cases in which myomectomy was successfully performed, the uterine balance was quite disturbed, as was evidenced by pain that presaged an impending abortion. With the aid of opiates, the organs regained their normal condition within a few days. The other case of myomectomy progressed most favorably and gave no evidence of the surgical infliction.

An ovarian complication, of the character of a cyst, greatly jeopardizes a pregnant woman's well-being. Statistics show that 30 per cent of cases abort if not operated upon, while the percentage of abortions after operation is about 18 per cent. The maternal operative mortality is about 2 per cent.

Cancer predisposes to abortion and its growth during pregnancy is usually very rapid. If the cancerous condition appears to be incipient, the affected portion of the cervix can be removed with a fairly good chance of not disturbing gestation. The greatest encouragement may be entertained when the operation is performed before the fifth month.

The treatment of cancer complicating pregnancy should be radical. If the patient has gone to almost full term and the child is still alive, the preferable delivery is by cesarean section followed either by a total extirpation of the uterus, or, if the patient's condition does not permit of total ablation, a rapidly performed Porro operation should be substituted. Delivery in the more favorable cases can be accomplished by the Dührssen vaginal cesarean section, followed by total vaginal extirpation. In the still more favorable cases, when the cancerous condition seems merely obstructive, delivery may be satisfactorily accomplished with forceps or version after the mass has been extensively incised. Hysterectomy should be done at once.

Reder's conclusions gleaned from the studies of a limited experience with surgical lesions complicating or coexisting with pregnancy are as follows:

1. A woman expecting to become pregnant should be thoroughly examined for physical defects.

2. Such defects should be corrected, if possible, before pregnancy takes place.

3. No operation that can be deferred should be performed upon a pregnant woman.

4. Any operation that will contribute to the safety of a pregnant woman should be performed without hesitancy.

LABOR AND ITS COMPLICATIONS

Tarr, E. M.: "Twilight Sleep"; Report of Fifty Cases Conducted in the Home. *Louisville M. J.*, 1915, xxii, 71.

Tarr reports 50 cases of "twilight sleep" conducted in the home, with a negative maternal mortality and an infant mortality of one in fifty; this one case he thinks was due to lues. His best results were obtained with scopolamine hydrobromate and "scopolamine stable" of the Hoffmann La Roche Laboratory, New York. He offers the following conclusions:

1. When properly used scopolamine morphine narcosis holds no danger for mother or child.

2. The maternal and fetal heart must be watched carefully at regular intervals.

3. The patient must be under the constant observation of an experienced physician or a specially trained nurse.

4. The first stage of labor is shortened.

5. The second stage is but slightly prolonged.

6. When used in time complete amnesia can be obtained in over 80 per cent of cases.

7. Cardiac cases are unquestionably benefited by "twilight sleep."

8. Perineal lacerations are lessened.

9. Indications for forceps are reduced very materially.

10. There is a very conspicuous absence of shock and exhaustion, factors which have a favorable influence on the puerperium.

11. The method does not interfere with any operative procedure which may be necessary to terminate labor.

12. When used in private homes, proper surroundings and competent assistance must be provided.

13. The method does not increase the tendency to uterine hæmorrhage, either ante- or post-partum.

14. That it causes insanity, as stated in lay journals, is not a fact.

15. The lying-in period is shortened, and all patients have a better "getting up."

16. "Twilight sleep" is a reality and has come to stay.

W. D. PHILLIPS.

Rongy, A. J.: Collective Study of 2,000 Cases of "Twilight Sleep." *Tr. Am. Ass. Obst. & Gynec.*, Pittsburgh, 1915, Sept.

Obstetricians are now confronted with the problem of deciding, scientifically, whether a patient manifesting the usual signs of pains during labor, even though she has no recollection of it subsequently, is actually suffering, or if these manifestations of pain are transient in character, leaving

no permanent impression. Again, they must decide whether to judge the intrinsic value of "twilight sleep" from the standpoint of analgesia or amnesia.

The question is, Are physicians, administering this form of treatment, seeing these patients give expressions of pain and hearing their cries, justified in accepting it as a painless labor?

The author obtained the results in 2,000 cases, an analysis of which shows that the method was practiced, according to the technique outlined by Gauss, in fully 90 per cent of cases. Morphine or narcophine was not repeated except in extreme cases of restlessness. Nearly all agree that the treatment should not be instituted until there are definite signs of active labor.

Of all cases treated 75 to 80 per cent were primiparæ. The average duration of treatment in primiparæ was 7 hours, in multiparæ 4 hours. The average number of injections in primiparæ was 5.5, in multiparæ 3. In about 60 per cent of cases the first stage was apparently shortened. All are unanimously agreed that the second stage is definitely prolonged by the treatment. The third stage does not seem to be influenced.

Treatment was discontinued in a small percentage of cases for the following reasons:

1. Too early administration of the drugs.

2. Disproportion between fetal head and pelvis.

3. Cessation of labor pains.

4. Marked alteration in the fetal heart sounds.

5. Repeated injections without any apparent effect.

Labor was terminated in primiparæ by the use of forceps in 26 per cent of cases. However, fully 80 per cent of these were low forceps which only required lifting the head over the perineum. A general anæsthetic was used during the stage of expulsion; in most instances chloroform was the anæsthetic of choice. Ethyl chloride, ether, and somnoform were also used, with these results:

Seventy-eight per cent of babies cried spontaneously.

Sixteen per cent were born oligopnœic and required active resuscitation.

Three per cent were born asphyxiated.

Three per cent were stillborn; 12 of those, or 12 per cent, may be accounted for by well-recognized pathological findings, such as transposition of viscera—2 cases, monstrosities—2 cases, macerated fetus, cerebral hæmorrhage—autopsy, etc.

It is the author's belief that it is impossible for this form of treatment to be universally adopted, as the greatest number of women are still confined either by midwives or by their family physicians who neither have the time nor the training required to carry out such a delicate therapeutic measure. However, this should not detract from its value, for an analysis of the various reports shows that most investigators are fully agreed that the method of treatment is devoid of any danger to the mother, and, by constant and careful watching the dangers to the baby may be eliminated also.

If we accept the theory that the semiconsciousness induced prevents the actual experience of pain, although apparently present in all its clinical phases, then labor must be considered painless and, therefore, to refuse to adopt it would be a failure on our part to carry out the trust reposed within us. On the other hand, if the mental state induced does not actually prevent the sensations of pain and the patient is actually suffering, even though it be modified, then the value of this method will depend upon the degree of pain, diminution, or analgesia and not upon the lack of recollection of pain or amnesia.

Personally, the author finds it difficult to reconcile the fact that a patient, displaying all clinical evidences of pain, such as crying and groaning, as is observed in these patients, does not actually experience it. However, it is evident that pain in a goodly proportion of cases is influenced to a degree that would warrant its adoption in selected cases, more particularly in primiparæ of the highly emotional type and in multiparæ in whom long and tedious labors are expected.

EDWARD L. CORNELL.

PUERPERIUM AND ITS COMPLICATIONS

Hopkinson, D.: Etiology and Pathology of Puerperal Pelvic Infections. *Wis. M. J.*, 1915, xiv, 77.

The author briefly reviews the literature and reaches the following conclusion: While pathogenic organisms are present in the normal vaginal secretions they should be considered only as a possible and not as a probable source of infection. The importance of careful aseptic surgical technique should be further emphasized by the knowledge of their possible existence. This gives a double responsibility; that is, the early recognition of an expected and apparently unaccountable development of puerperal infection and, secondly, the avoidance of all possible external sources of infection.

EDWARD L. CORNELL.

Darling, W. G.: Puerperal Infection. *Wis. M. J.*, 1915, xiv, 80.

An accurate diagnosis of puerperal sepsis depends on a careful examination of the entire body in order to exclude other foci of infection which may be the causal agents in the fever; and, secondly, by the demonstration of pathogenic organisms in the lochia of the puerperal woman. The greatest hope for the reduction of the mortality and morbidity from this disease lies at present more largely in the field of prophylaxis. The proper place for the conduct of an obstetrical case is in the lying-in department of a well-equipped hospital. When such is not available, the preparation of the room, bed, the selection of the nurse, and conduct of the case should be done with the same or greater care than would be employed in the performance of a laparotomy. We must strive for greater precision in abdominal diagnosis and

should substitute rectal for vaginal examinations whenever possible. Ample time must be given each case for spontaneous delivery in the absence of imperative signs of actual danger to mother or child. Sufficient time must be allowed for the spontaneous delivery of the placenta, thereby minimizing blood loss. The adoption of a separate instrument bag and sterilizer of ample capacity to carry abundant materials for obstetrical work is desirable, this bag to be used only in attending clean cases. Many authorities recognize but one indication for entering the uterine cavity during the puerperium, and that is to control hæmorrhage. Intra-uterine douches or the curette cannot remove bacteria embedded in the uterine wall, but may do much harm by disturbing the leucocytic barrier already established.

The author emphasizes the fact that the keynote of prophylaxis against puerperal sepsis is more time in the preparation for and conduct of obstetrical work in general, and that in the treatment of the disease less active measures than have hitherto been employed are resulting in a very hopeful reduction in both mortality and morbidity in the hands of our most eminent obstetric surgeons.

EDWARD L. CORNELL.

Thaler, H., and Zuckermann, H.: Prophylaxis of Puerperal Fever by Lactic Acid Douches During Pregnancy (Zur Prophylaxe endogener Wochenbettfieber mit Milchsäurespülungen während der Schwangerschaft). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xlii, 1.

Most authors now concede that endogenous infection is possible during labor. As a means of preventing such infection, Thaler and Zuckermann recommend the use of 5 per thousand lactic acid as a vaginal douche during the latter part of pregnancy. Among 153 pregnant women examined by them, 73 showed more or less abnormal vaginal secretion. All of these were given the lactic acid douches, but in only 46 cases was the treatment continued for a long enough time to be able to judge of its effects. The results of treatment in these 46 cases are given in tabulated form, and there are two plates showing the difference in the bacteriological findings before and after treatment. In these cases douches were given daily for two or three weeks, the average number given being 18.

The time between the last treatment and delivery in the author's cases varied from 8 to 56 days, but it is not safe to count on the effects of treatment for more than two or three weeks. The puerperium in all but 4 of the cases was afebrile, and in these 4 the fever was slight and recovery rapid. The vaginal flora, which was at first pathological, after the douches showed only or chiefly the gram-positive Döderlein's vaginal bacilli. The object of the treatment is not to sterilize the vagina, but to increase the growth of the normal vaginal bacteria until they overcome the pathological cocci.

A. Goss.

MISCELLANEOUS

Baumann, E.: Experience with the Abderhalden Reaction in the Obstetrical Hospital of Basel (Die Erfahrungen mit der Abderhalden'schen Schwangerschaftsdiagnostik im Frauenhospital Basel). *Monatschr. f. Geburtsh. u. Gynäk.*, 1915, xlii, 199.

After a discussion of the principle of protective ferments and the Abderhalden diagnosis, the author discusses his own experience with it. In view of the many technical sources of error, he emphasizes the fact that exact and careful technique is essential to any degree of success, considerable practice being necessary in order to master the technique. The author has found the dialysis method, which he describes in detail, thoroughly reliable. He always had good results with placenta prepared by himself and with the ninhydrin reaction. He gives tables showing the reactions in all his cases and divides them into the following classes: (1) intra-uterine pregnancy, (2) bleeding from the umbilical cord, (3) puerperium, (4) abortion, (5) extra-uterine pregnancy, (6) eclampsia, (7) hydatidiform mole, and (8) negative reactions.

He had excellent results in the differential diagnosis of doubtful cases. The mistaken results were not more than 1.5 to 2 per cent, except in abortion and extra-uterine pregnancy, where they were 3 to 4 per cent.

A. Goss.

Kolmer, J. A., and Williams P. F.: Serum Studies in Pregnancy. *Am. J. Obst.*, N. Y., 1915, lxxii, 101.

After giving in detail the results of their experiments and a discussion of the results the authors give the following conclusions:

1. Proteotoxins are produced during the Abderhalden pregnancy reaction, which when injected intracutaneously and intravenously into normal animals produce local and general changes analogous to anaphylactin reactions.

2. Proteotoxins produced in a mixture of human pregnancy serum and human placenta are toxic for normal guinea pigs.

3. The ninhydrin test with dialyzates and intracutaneous and intravenous injections of the sera in the Abderhalden reactions yielded fairly parallel indices of the degree of protein digestion and proteotoxin production.

4. The addition of various tissue substrats, other than placental, to human pregnancy serum was followed occasionally by proteotoxin production, as shown by intracutaneous and intravenous tests with the serum, but except when a substrat of human kidney was used the amount of proteotoxin produced was usually much less than that produced in mixtures of pregnancy serum and human placenta. Similar results were observed within organic absorbents, as kaolin, starch, quartz, etc.

5. The proteolytic ferments in healthy normal serum may produce small amounts of proteotoxins when tissue substrats are added and occasionally

and to less degree with inorganic absorbents, as kaolin and starch.

6. The complement in itself has no direct relation to the ferments in pregnancy serum. Inactivation of a serum probably reduces its digestive power through destruction of normal proteolytic ferments, and reactivation of a serum by means of the addition of serum complement increases its digestive power to a slight degree, probably by reason of the addition of these normal ferments.

7. In pregnancy serum there are two sets of proteolytic ferments, normal and non-specific and specific ferments. The former may be released through absorption of the antifermment by means of various non-specific organic and inorganic substances; whereas the latter are released through the absorption of the antifermments by means of the specific protein antigen alone.

8. The experiments also suggest that the protein matrix in the Abderhalden reaction is not only the protein of the serum but also to some extent that of the tissue substratum itself.

C. H. DAVIS.

Miller, J. R., Keith, N. M., and Rowntree, L. G.: Plasma and Blood Volume in Pregnancy. *J. Am. M. Ass.*, 1915, lxxv, 779.

The authors give a preliminary report based on results obtained in a small series of pregnant women by means of a new method for the determination of total plasma and blood volume devised by Rowntree, Keith, and Geraghty. This method consists in the introduction directly into the circulation of a non-toxic, slowly absorbable dye, vital red, which remains in the plasma long enough for thorough mixing and the colorimetric determination of its concentration in the plasma by comparison with a suitable standard mixture of dye and plasma. It gives the total plasma volume, and by the use of the hæmatocrit the total blood volume can be obtained. The technique is described in detail.

These studies indicate that there is an increase in the absolute and relative volumes of both plasma and blood late in pregnancy, with a slow return to normal during the puerperium.

These findings confirm the work of Zuntz on humans and of Heidenhain and Spiegelberg and Gscheidlen on animals.

EDWARD L. CORNELL.

Bandler, S. W.: Pituitary Extract in Obstetrics and Gynecology. *Tr. Am. Ass. Obst. & Gynec.*, Pittsburgh, 1915, Sept.

Two important points are emphasized as to the value of pituitary extract in obstetrics and gynecology. The first point upon which stress is laid is that the drug should not be used by the general practitioner until the head of the embryo is firmly engaged and molded in and through the brim of the pelvis, the assurance thereby being given that there is no malproportion between the foetus and the pelvic bones.

The next point upon which emphasis is laid is that the dosage should be carefully estimated. The

author has found in his experience that a hypodermic of one-third of an ampoule of Parke Davis & Co.'s preparation is the largest single dose that should be used in the beginning. Occasionally, when the patient's powers have been thoroughly tested, a half of one ampoule should be used. This is an all-important point.

With these two factors carefully observed, no harm can result, because the effect of the pituitary extract is evanescent, it does not cause a tetanic contraction, it simply increases the contractile power of the uterus, and makes it behave as does the uterus in a normally progressive labor.

If these facts are borne in mind no injury can take place, and no rupture of the uterus is possible.

The author also finds the extract of value when the Barnes bag has been introduced to induce labor. He finds that if hypodermics of this drug be given in small and divided doses, frequently repeated, the labor is brought on much more quickly, without need for the introduction of additional bags.

Dry labor furnishes no contra-indication if the head is firmly engaged and molded in and through the brim, and if small doses be used the progress is absolutely normal.

The author also discusses the value of this drug in the first stage of labor. He acknowledges that there is likely to be much opposition at first, and that in advocating its use in the first stage, he has met many men who do not think it is the correct procedure. He shows, however, that there is no danger if the pelvis is of proper proportions, if the head is firmly fixed in and through the brim, and if the membranes are unruptured. In such a stage no harm can result.

Very often the first stage is long and tedious. The patient suffers but no progress is made. The author has found, in a large number of private cases, that the administration of a third of an ampoule of pituitary extract, given at intervals of half an hour, will in a very short time bring on a progressive, rapid dilatation of the cervix, and many hours of suffering will be avoided. He considers its use in the first stage a most decided advantage, often shortening by hours the duration of the labor.

Pituitary extract is of value in cesarean section if given before the incision is made, as it causes such a thorough contraction of the uterus after the fœtus is extracted that the uterine sewing is done in an almost bloodless field.

Pituitary extract may be given in full ampoule doses for other conditions than those of labor itself.

In the post-partum period the author is accustomed after cesarean section and occasionally in other cases to give half an ampoule by needle in the morning, and half an ampoule by needle in the afternoon for a long period.

In gynecological conditions, associated with profuse and excessive bleeding, of the nature of menorrhagia and metrorrhagia, especially such as are not due to uterine tumor, the author has obtained splendid results.

One hypodermic of pituitary extract (a full ampoule) is given every day for weeks and weeks at a time. It has a marvelous effect in eventually contracting the uterus, and has the effect of causing a certain degree of atrophy of the ovaries. This effect of pituitary extract is much more marked after a curettage, but even without curettage it will aid in diminishing menorrhagia and metrorrhagia, especially in those cases in which, after the Dührsen operation, profuse bleeding occurs for several months.

The drug is not harmful, there are no after-effects, and there are practically no contra-indications that the author has found in his experience, with the possible exception of certain types of eclampsia.

The value of pituitary extract in labor is evidenced by its results. The author shows that in the primigravida the average duration of labor is reduced one-half. In multiparae, the effect is still more startling. The average duration of labor, from the first hypodermic of pituitrin, varies from fifteen minutes to an hour and a half or two hours. In fact, the author makes the statement that for months he has not spent more than an hour and a half to two hours at the bedside of any multipara.

In conclusion, he states that pituitary extract has practically excluded the use of forceps. In his own private cases he has not applied forceps for a very long period, pituitary extract aiding in the expulsion of the fœtus in practically all cases. He does not wait until a stage of inertia results. If in the first stage, and especially in the second stage, a period comes on where progress is not normal, no matter how much suffering the patient shows, pituitary extract in small and divided doses is given.

The whole value of pituitary extract, in the author's mind, can be summarized in the statement that if properly used it makes any subnormal case behave as a normally progressive case does. One of its greatest purposes is fulfilled in the line of diagnosis. If any patient during her first or subsequent labor time experiences indefinite pains or what are called "false pains," the administration, at intervals of a half-hour, of three doses of one-third of an ampoule of pituitrin makes the diagnosis. If no rhythmic pains result within a short period, the patient is not in labor. On the other hand, in a large proportion of cases such preliminary pains are found to be real labor pains and the patient goes on into rhythmic progressive labor pains.

Pituitrin is supposed to have a decided value in causing contraction of the bladder. Bandler has not found it of great value for this purpose in post-partum or post-operative cases. The catheter gives immediate relief. In the nervous type, repeated use of the drug aids in restoring to the bladder its normal tone.

Pituitrin is a remarkable general stimulant in post-operative cases, and has taken the place, in the author's practice, of eserine in post-partum and post-operative intestinal atony or paresis.

The author finds that in many ambulatory cases,

one of the effects of the drug is to rapidly stimulate intestinal peristalsis. The possibility of drawing conclusions as to the state of the internal secretions from this action and from other effects is worthy of further study.

Griffith, W. S. A.: An Investigation of the Causes Which Determine the Lie of the Fœtus in Utero.
J. Obst. & Gynec. Brit. Emp., 1915, xxvii, 105.

After discussing the various textbook theories regarding the causes determining the lie of the fœtus *in utero*, the author directs his attention to the following points:

1. The specific gravity of the fœtus at different periods of development and of its most important parts.
2. The specific gravity of hydrocephalic and anencephalic fœtuses and especially of the head in these cases.
3. The center of gravity of the fœtus.
4. The varying specific gravity of different specimens of liquor amnii.
5. The relative specific gravity of the fœtus and the liquor amnii.
6. The metacenter, or center of buoyancy. This is the center of gravity of a substance of uniform density exactly corresponding in shape and size to the fœtus. It is the center through which the resistance to the descent of the fœtus, whatever its position *in utero*, must act in a vertical direction.
7. The relative positions of the center of gravity, the fœtus, and the metacenter.
8. Fœtal movements.
9. Uterine movements; i.e., contractions.
10. Maternal movements.

The specific gravity of 60 fœtuses was investigated, including examples of each month from the second onward. Seven showed maceration, and a few were rejected on account of air having entered the lungs in small quantity or the stomach and intestines in large quantity.

A considerable number of fœtuses were divided into three parts: (1) the head; (2) the thorax and arms, including the liver and spleen, which in a fœtus that has not breathed are entirely covered by the lower part of the thorax; (3) the abdomen and legs. The details of 46 specimens selected for their accuracy are set forth in several tables.

In no instance did the specific gravity of the head exceed that of the remainder of the body before the end of the sixth month. It is generally lower, and in only one case of the sixth month was it equal to that of the body.

In 3 only out of 9 normal fœtuses of the seventh month was the specific gravity of the head higher than that of the body.

In 2 of the eighth month the specific gravity of the head was lower than that of the rest of the body.

Of 16 full-term fœtuses the specific gravity of the head was considerably higher than the body in 13, equal in 2, lower in 1.

Up to the end of the sixth month the difference in the specific gravity of the three divisions of the fœtus is very slight. During the seventh and eighth months the thoracic portion is the highest, and only in the last month is the head constantly higher than the rest of the body.

The relative specific gravity of the head to the body has no necessary relation to the lie of the fœtus, and maceration scarcely affects its specific gravity, contrary to existing theory.

The center of gravity is nearer the head than the breech in the specimen of the fourth month only; in the fifth and sixth months it is practically midway; and in the eighth and ninth months it is nearer the breech. This gradual displacement of the center of gravity towards the breech is apparent, however, not real. Owing to a greater elongation of the cephalothoracic portion than of the abdominal portion of the fœtus the distance from the extremities of the long axis varies, and this causes an apparent displacement.

CAREY CULBERTSON.

Fildes, P.: Congenital Syphilis Among the New-born.
J. Obst. & Gynec. Brit. Emp., 1915, xxvii, 124.

The object of this investigation was to determine the incidence of syphilis in infants, as a result of congenital infection. For this purpose it was arranged to perform the Wassermann test upon a random sample of 1,000 infants at birth, and again upon the same infants and their mothers at a certain period after birth. The author has arrived at the following conclusions:

1. It is assumed that the great majority of cases of congenital syphilis will develop a Wassermann reaction in from two and a half to four months after birth. It was therefore not necessary to prolong the observation further.

2. The population examined (East End) was probably representative of other groups of similar social status in different parts of London; namely, the respectable working classes.

3. In this population the following was noted:

a. Only 1 baby in 1,015 showed symptoms of syphilis at birth.

b. Only 3 babies in 660 developed syphilis, as evidenced by a positive Wassermann reaction during the period of observation, and of these only 1 showed symptoms.

c. Thus only 4 instances of syphilis were detected among 677 babies, 5.9 per 1,000, and of these, 1 died and 2 showed no symptoms.

d. Only 1 child died of syphilis, while 16 were lost, presumably from other causes.

4. Twenty-seven, 3.9 per 1,000, of the women gave a positive Wassermann reaction, but only 4 of these transmitted syphilis.

5. The Wassermann reaction obtained with blood from the placental end of the umbilical cord is not diagnostic of syphilis in the infant but of syphilis in the mother. However, only a minority of syphilitic women induce this positive reaction

in the umbilical cord serum, and only a minority of syphilitic children give this reaction at birth.

CAREY CULBERTSON.

Barton, E. A.: The Condition of the Larynx and Trachea in the Stillborn Infant; Its Bearing on Artificial Respiration. *J. Obst. & Gynec. Brit. Emp.*, 1915, xxvii, 138.

The result of a number of autopsies on stillborn infants that had never attempted to breathe, showed that in all such cases the glottis was closed. In a majority the lower half of the trachea was also occluded, the posterior muscular wall being folded into the lumen and the cartilage rings sharply flattened and incurved, so that the trachea presented on section a very flattened oval. A deep sulcus formed by the interval between the ends of these incurved cartilages runs vertically down the posterior surface of the trachea. It is also suggested that an outward elastic tension of the ribs might further aid the initial respiration. These observations on artificial respiration of the stillborn flaccid infant indicated that until the glottis is opened mechanically and the trachea is made patent it is useless to attempt any postural or other measure to inflate the lungs; therefore, the first separation of these closed surfaces is best attained by mouth-to-mouth aspiration.

CAREY CULBERTSON.

Wichmann, S. E.: A New Obstetrical Forceps — the "Forceps Fennica." *J. Obst. & Gynec. Brit. Emp.*, 1915, xxvii, 57.

Wichmann of Helsingfors has advised a new model for obstetrical forceps, which he offers under the name "forceps fennica," in honor of his native land.

He reopens the question of the axis-traction principle as applied to the forceps, and criticizes the German, French, and English models. His present effort is an attempt to overcome certain of the deficiencies common to all of these instruments. He has made the following conditions necessary for the construction of his new model:

1. The surfaces of the entire forceps must be as smooth and simple as possible; its structure, and especially its handles, must be light.

2. It must be made so that it can be used for a low-standing head at least just as advantageously as the best so-called low forceps; i.e., J. Simpson's and Naegele's.

3. It must be made so that it can be used for a high-standing head at least just as advantageously as the best so-called axis-traction forceps; i.e., Larnier's and A. R. Simpson's.

4. The traction attachment must be so adjusted that it can always, even during the operation, be put on and taken off in a second by means of an automatically acting lock, so that thereby the low forceps becomes an axis-traction forceps and vice versa.

The pelvic curve has been reduced to 6 to 6.5 cm. (Simpson's 7 to 7.5 cm.; Larnier's 8.5 cm.; Naegele's 9.5 to 10 cm.). The fixation screw is only 3.5 cm. long and is situated 2.5 cm. from the lock (Larnier's 3.5 cm.; Simpson's 2 cm.).

In the construction of the traction attachment, Wichmann has deviated somewhat from the most perfect Larnier models. The traction rods are inserted into the outer sides of the blades and their lock has been simplified, but in principle the fixation of the attachment is much the same as in Larnier's forceps. It is the author's intention to have this attachment removed as soon as the foetal head is on the pelvic floor.

By reason of its larger cephalic curve Wichmann's forceps seizes the infant's head chiefly with the peripheral third of the blades, thus rendering possible a rotation of the head within the forceps both during traction and during the pauses. A fresh application of the blades thus becomes unnecessary in the majority of cases.

The comparative length of this new instrument is shown by the following figures:

From the tips of the blades to the insertion point of the handle-bar of the traction attachment: Larnier's 36 cm.; Simpson's 36 cm.; Wichmann's 36 cm.

Entire length of the instrument: Larnier's 38.5 cm.; Simpson's 37 cm.; Naegele's 40 to 45 cm.; Wichmann's 38 cm.

From the tip of the blade to the lock: Larnier's 24.5 cm.; Simpson's 22.5 cm.; Naegele's 25 to 30 cm.; Wichmann's 23.5 cm.

Distance between the tips of the blades when closed: Larnier's 2 cm.; Simpson's 2.5 cm.; Wichmann's 2.5 cm.

The width of the cephalic curve: Larnier's 7 cm.; Simpson's 8.2 cm.; Wichmann's 8.2 cm. This curve is increased to 10 cm. by opening the forceps.

CAREY CULBERTSON.

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

Key, E.: Malformations of the Kidney from the Surgical Point of View (Über Nierenmissbildungen vom chirurgischen Gesichtspunkt aus). *Nord. med. Ark.*, Stockholm, 1914, xlvii, No. 7.

The author reviews the subject of malformations of the kidney and discusses the pathological changes which may occur in the different forms: their symptoms, diagnosis, and operative treatment. Various kidney malformations have a surgical interest, and, because of the possibility of a kidney anomaly every means of differential diagnosis must be exhausted before any operation is performed on the kidney. Disease of a solitary kidney is especially interesting from this point of view. The author describes the case of a 43-year-old woman, who two years before had had nephropexy performed on the right side and who came for treatment with an enlarged right kidney and turbid ill-smelling urine. Cystoscopy revealed only one ureteral opening. An exploratory incision was made in the left kidney region and no kidney found.

According to Albarran, solitary kidney should be suspected: (1) when only one ureteral opening can be made out on cystoscopy, (2) when both ureters open near each other on the same side, (3) when functional diagnosis shows urine of the same composition but of very different quantities on the two sides, indicating atrophy of one kidney, and (4) when an enlarged kidney is found on one side with an uneven inner border.

Horseshoe kidney is also of surgical interest, as it is subject to pathological changes, especially hydronephrosis and stone formation. The author describes the case of a 28-year-old man from whom he removed a stone by pyelotomy from a horseshoe kidney that had been diagnosed before operation. Part of a horseshoe kidney may be the seat of a new-growth. In the literature the author found 7 cases of heminephrectomy for tumor of a horseshoe kidney, 3 of which ended in death. The author himself had a case of hypernephroma in a horseshoe kidney in a 34-year-old man, with recovery after heminephrectomy. The tumor was in the right half, which was connected with the left half by a bridge as thick as a finger.

Even the normal horseshoe kidney may give rise to symptoms which, according to Rovsing, are so characteristic that a diagnosis of horseshoe kidney may be made from them. The displaced kidney is also of surgical interest, first, because it may give rise to mistaken diagnoses, especially in women, and second, because it may be the seat of pathological changes.

Among 44 patients with ectopic kidney Girard found 21 cases of hydronephrosis. The author reports 2 cases of this sort. In one case, that of a 42-year-old man, a tubercular pelvic kidney was removed. This case had not been properly diagnosed before operation because in the röntgen picture the spleen shadow simulated a normally placed left kidney. In the second case an operation was performed on a 33-year-old woman for thrombosis of the mesenteric vein, and the left kidney was found in the true pelvis.

A. Goss.

Cabot, H.: Frequency of Recurrence of Stone in the Kidney After Operation. *Surg., Gynec. & Obst.*, 1915, xxi, 223.

The author's paper was based upon a study of 87 cases in which a thorough examination was made at the clinic of patients who had previously been operated upon for stone. Of these, 66 were cases of stone in the kidney and 21 were cases of stone in the ureter. Of the cases of stone in the kidney 51 per cent were cured and 49 per cent showed recurrence. Of the cases of stone in the ureter, 71 per cent were cured and 29 per cent were not.

A further analysis of the cases showed that of 30 cases in which nephrotomy was done 43 per cent were cured and 56 per cent showed recurrence. Of 33 cases of pyelotomy 49 per cent were cured and 51 per cent showed recurrence. Of 12 cases of nephrectomy one showed stone in the remaining kidney.

Krotoszyner, M.: Pitfalls in the Diagnosis of Renal Lithiasis. *Calif. St. J. Med.*, 1915, xiii, 312.

The author states that the diagnosis of surgical kidney lesions is, in many instances, very difficult and not rarely entirely impossible, especially in renal lithiasis.

In order to avoid grave diagnostic errors the following facts must be borne in mind:

1. A kidney may for a long period of time contain one or more stones of large size, occupying a position in the renal pelvis extending into the calyces, without causing any subjective and only such slight objective symptoms that the existence of nephrolithiasis is either entirely overlooked or not suspected.

2. In the presence of one or more calculi in the kidney pain may exist in the opposite organ.

3. Pain may be of such vague nature and location as not to suggest its being in any way connected with the diseased organ.

4. Pain may be so referred that a disease of another organ is diagnosed.

5. A radiographic examination of the upper urinary tract should be made in every case of long-standing pyuria, with negative findings for tuberculosis.

6. In doubtful cases a pyelography should be done.

7. Calcified tubercular foci within the renal parenchyma may on the plate look like calculus-shadows.

8. A stone-shadow may be cast by an object outside the kidney.

9. Small renal stones with rough surfaces, which occasionally are not demonstrable on the plate, may cause a symptom-complex pointing to a grave kidney lesion (tuberculosis, malignancy).

10. In cases where stone-shadows are present on renal plates of both sides, the existence of a fused or horse-shoe kidney should be borne in mind.

The author cites a case of a 32-year-old individual with pyuria, pain on the right side and septic fever. Cystoscopy demonstrated a moderate sub-acute cystitis; on ureteral catheterization no urine could be obtained from the right side and very little from the left. Radiography showed typical calculus-shadows in both kidney regions; pyelography was of no material aid. A diagnosis of bilateral nephrolithiasis with secondary infection and destruction of the right kidney was made. On operation the kidney was found to be fused, its right half a sac filled with muco-pus, while its left half appeared to be fairly normal; there was no line of cleavage between the two halves, which showed independent vessels and ureters. Calculi in either half were removed through small incisions which were closed with catgut while the sac on the right side was incised and drained. All efforts to promote diuresis failed and the patient died about one week after the operation, with uræmic and septic symptoms.

LOUIS GROSS.

Ekehorn, G.: Primary Localization and Mode of Extension of Tubercular Processes in Chronic Hæmatogenous Tuberculosis of the Kidney (Über die Primärlokalisation und die Ausbreitungsweise des tuberkulösen Prozesses bei der chronischen hämatogenen Nierentuberkulose). *Nord. med. Ark.*, Stockholm, 1914, xlvii, No. 12.

In considering the primary localization and mode of extension of hæmatogenous kidney tuberculosis two questions are of special interest: (1) What part of the kidney is infected first? (2) In what way do the bacilli reach the point of infection? Of equal interest is the question raised by the author as to whether we may assume a primary hæmatogenous focus of infection from which the remainder of the kidney is infected secondarily, or whether the tubercular infection takes places simultaneously at several points.

The author studied this question in two very recent cases of kidney tuberculosis. In one case there was a very small cavity (1 mm. in diameter) in the upper pole of one pyramid, which on close ex-

amination was found to be a solitary hæmatogenous focus of infection — an infected embolus. The papilla of this pyramid was ulcerated and the surface of the ulceration contained enormous masses of tubercle bacilli. Macroscopically all the rest of the papillæ appeared to be unchanged. Microscopically, however, they were found to show superficial ulcerations with superficial tubercular changes. In the second case there was also only one small cavity, which, however, had broken through the apex of the affected papilla and connected with it by a fistula. According to these important observations the infection in these cases was certainly unilateral, the infections of the papillæ and walls of the calyces secondary, ascending, and borne by the urine. Similar observations were made by Bazy in a case of early operation for kidney tuberculosis, in which he found one small cavity with a fistula and an ulcerated papilla. Unfortunately, Bazy did not examine the neighboring papillæ, which were apparently normal under the microscope.

A. Goss.

Wallace, C., and Dudgeon, L. S.: Unilateral Hæmorrhage and Unilateral Pain of Renal Origin. *Brit. J. Surg.*, 1915, iii, 82.

The authors report in some detail 4 cases: 2 of unilateral hæmorrhage and 2 of unilateral pain, all of renal origin. They state that these cases confirm what is already well known, that nephritis may cause a unilateral hæmaturia which clears up after operation. They also note that a nephritis may at one time give rise to pain and at another to hæmorrhage.

The first case, a male, aged 40 years, was admitted with a history of nine weeks' painless and almost constant hæmaturia. The previous history was unimportant.

The results of examination were as follows: urine bloody, specific gravity 1.020, daily output 26 ounces. Microscopy revealed blood-cells, but no casts or tubercle bacilli. Cystoscopy showed bloody urine coming from the left ureter, while the urine from the right ureter was normal. Indigo-carmin appeared in ten minutes, deeply colored.

The kidney was exposed and the incision into the kidney pelvis was made through the convex border. Nothing abnormal was seen with the naked eye either on the cut surface or in the pelvis. The patient was discharged with normal urine. Histological examination of an excised piece showed small scattered areas of fibrosis with a few glomeruli replaced by fibrous tissue. There was no thickening of the capsule. The chief histological changes were found in the epithelium of the convoluted tubules which showed various degrees of degenerative changes.

The second case, a male, aged 45 years, gave a history of intermittent hæmaturia of 4 years' duration. He had had pleurisy five months before admission, with good recovery. There had been frequent urination for three months. The hæmor-

rhage at times had been profuse with formation of clots in the urine. There had been intervals of two weeks of freedom from bleeding. On examination, the urine was acid, specific gravity 1.022, and contained a few pus-cells, but no casts; the average daily amount was thirty ounces. X-ray examination of the urinary tract was negative. Cystoscopy showed copious hemorrhage from the right ureter; the urine from both sides was deeply colored with indigo-carmin in 15 minutes, the patient being under an anæsthetic.

The kidney was exposed and incised into the pelvis through the convex border. Naked-eye examination of the pelvis and cut surface revealed nothing abnormal. A small vein crossed the posterior surface of the ureteropelvic juncture and possibly slightly constricted the canal. At the time of discharge the urine contained a few pus-cells, but no blood.

Histological examination showed thickening of the capsule to four times the normal thickness. There were no scattered areas of fibrous deposits and no glomerular changes. The main histological change concerns the epithelium of the convoluted tubules which show all stages of degeneration.

The third patient, a male, 28 years old, complained of a fixed pain at a point between the umbilicus and the anterior superior spine, of 18 months' duration. Physical examination was negative. The X-ray plate showed a doubtful shadow in the region of the left kidney. The urine was acid, specific gravity 1.008, with slight amount of albumin, there were no casts but there were a few pus-cells and oxalate crystals. Cystoscopy was negative. Incision of the kidney showed nothing abnormal in the pelvis or parenchyma. Pain ceased after operation.

Histological examination showed no increase of capsular tissue and no disseminated fibrosis. There was an area of round and spindle-celled infiltration extending along the connective-tissue septa between the tubules, partly compressing the latter in a limited area. The chief changes were confined to the tubules which were distended with coagulated material. This same material was present in the glomeruli. The epithelium of the tubules showed various degrees of degeneration. Bacteriological examination showed a short-chained streptococcus. Intraperitoneal inoculation into two mice failed to produce the slightest effect.

The fourth patient, a male, 34 years old, suffered with pain, at times dull, at other times paroxysmal, referred to the same point as in the last-mentioned case. The trouble was of one year's duration. Physical, X-ray, and cystoscopic examinations were negative. Indigo-carmin and phthalein tests showed good renal function. The urine was negative for casts, albumin, and sugar. Hemisection of the kidney showed nothing abnormal on the cut surface. Pain ceased after the operation.

Histological examination showed no thickening of the capsule, but scattered areas of fibrosis were

present in sections. In one such subcapsular area the glomeruli were completely atrophied and replaced by dense fibrous tissue. Three microscopic calculi were present in a distended tubule. Most marked changes were noted in the convoluted tubules where many cells showed degenerative changes and the lumina were distended with granular material.

The absence of casts in all four cases was remarkable. The tests of renal efficiency showed no departure from the normal in any of these cases. Etiological facts to explain the symptoms and the changes met with in the renal tissue were entirely wanting.

Considerable importance is attached to the occurrence of vacuolation of the cells of the tubules and of the exudate in two cases. Vacuolation of renal cells has been produced experimentally by the injection of an isonephrolysin. It is suggested that in two of the above clinical observations the vacuolation was produced by a toxin in the blood, which in addition may be supposed to have caused the nephritis.

H. A. FOWLER.

Greene, R. H.: The Value of Some Tests of Renal Permeability. N. Y. M. J., 1915, cii, 343.

A series of functional tests was performed on different patients and comparisons made. These experiments show cryoscopy to be of value, though requiring too much blood and urine to be practical, while *polyuria expérimentale* (Albarran) must be modified before it will be generally used.

Later investigations show that the indigo-carmin test is rapid, but too markedly influenced by the water intake. The technique of the test is as follows: The patient must take no water for five hours before the injection is made; inject intramuscularly in the gluteal region 10 ccm. of an 0.08 solution of indigo-carmin, to which has been added 0.1 gm. of salt. Normally functioning kidneys begin to excrete the dye in from five to ten minutes.

The total nitrogen test is accurate, but impractical, requiring special apparatus and elaborate chemical technique.

The phenolsulphonephthalein test, while more practical than the nitrogen, is rendered inaccurate by pus, advanced nephritis, and infective processes.

From a practical standpoint the phloridzin test is of more value than the nitrogen or phthalein tests when used either with or without ureteral catheterization; catheterization being necessary only to show if the kidneys are excreting unequally.

The technique of the phloridzin test is as follows: Inject subcutaneously in the gluteal region 30 minims of a 1:400 solution, the exact quantity being previously prepared and sterilized in glass ampoules. Test urine in thirty minutes for sugar; if not demonstrated repeat in fifteen minutes. Healthy kidneys excrete sugar within the half-hour limit. All diseased kidneys show delayed excretion; likewise some normal kidneys. In the latter case, the causes of delay (in order of importance) are a low

blood sugar content; (2) difficulty in eliminating sugar; (3) innervation disturbance in the kidney, as carcinoma, arteriosclerosis, general nerve disturbance and hepatic cirrhosis.

The conclusions reached are: (1) Diseased kidneys always excrete slowly, and if seemingly healthy kidneys show delay there is a pathologic condition present in the body which demands further investigation. (2) The value of all tests is relative rather than absolute. (3) All things considered, the phloridzin test is the best for routine examination.

G. S. PETERKIN.

Kretschmer, H. L., and Greer, J. R.: Insufficiency at the Ureteral Junction. *Surg., Gynec. & Obst.*, 1915, xxi, 228.

The authors report a case of this rare pathological condition, and review 16 similar cases recorded in the literature.

Dilatation of the upper urinary tract as the result of obstructive lesions are not uncommon, and the various types of these lesions are mentioned by the authors. Cases in which the dilatation is found without the presence of obstructive lesions or lesions of the central nervous system are very rare.

There seems to be no definite uniformity in the reasons mentioned by the various authors who have reported similar cases, for the existence of this condition. Of the four theories mentioned, the congenital theory seems to be the one most frequently called upon of late to explain this condition, and has perhaps the largest number of adherents, being given preference by Bacharach, Halle, Legueu, and Papain.

The case reported by the authors was a young man aged 20, who sought relief from pyuria. There were no such urinary symptoms, as frequency or retention, as were present in some of the cases reported in the literature. Cystoscopic examination revealed the presence of two dilated ureteral orifices. A 20 per cent solution of cagentos was introduced into the bladder and an X-ray picture taken. This showed that the cagentos solution had found its way into both kidney pelves and into both ureters, all of these organs showing enormous dilatation.

Verriotis, T.: Complications Originating in the Stump of the Ureter After Nephrectomy for Tuberculosis and Their Treatment (Über die vom Ureterstumpf nach Nephrektomie wegen Tuberkulose ausgehenden Komplikationen und ihre Behandlung). *Ztschr. f. Urol.*, 1915, ix, No. 7.

The stump of the ureter left after nephrectomy for tuberculosis may be the point of origin for tedious fistulæ and abscesses; empyema has also been observed, simulating the symptoms of pyonephrosis. Pyuria, with or without tubercle bacilli, may also originate from the stump of the ureter. The first consideration in treatment is to avoid the formation of fistulæ as far as possible. Attempts have been made to extirpate the ureter

down to its opening into the bladder, but this is quite a severe operation, and often leaves behind it an abdominal hernia. Even after total ureterectomy, as well as after partial, the author has computed that there are fistulæ in 10 per cent of the cases. He believes that the frequency of fistulæ may be decreased by refraining from establishing drainage through the wound.

He recommends Chevassu's method of lateral, subperitoneal, extracapsular nephrectomy, suture of the wound, and lumbar drainage through an independent opening, by means of a small drain that is quickly removed. Chevassu has used this method in 19 nephrectomies for tuberculosis with the following results: in 10 healing by first intention, in 6 complete cicatrization within 20 to 28 days, and in 3 within 1 to 2 months. In none of these cases was there a fistula.

A. Goss.

BLADDER, URETHRA, AND PENIS

Sherrill, J. G.: Vesical Diverticula. *Am. J. Urol.*, 1915, xi, 303.

The author gives a very full review of the subject including reports of 101 cases of vesical diverticula. All true vesical diverticula, likewise all so-called double, triple, or divided bladders, are congenital. While in most cases radical removal of the diverticula is indicated, often the removal of an enlarged prostate or a median bar is all that is necessary to relieve the patient. The suprapubic route is the one of election, but in a few cases where the primary object of the operation is the removal of a hypertrophied prostate, the perineal route may be preferred.

In rare instances where the diverticula is below and behind the bladder, it may be advisable to employ the so-called sacral route, if necessary resecting a portion of the sacrum.

B. S. BARRINGER.

Buerger, L.: Pathological Diagnosis of Tumors of the Bladder with Particular Reference to Papilloma and Carcinoma; a Study of One Hundred and Thirteen Neoplasms. *Surg., Gynec. & Obst.*, 1915, xxi, 179.

From a study of the pathology of 113 tumors of the bladder among which there were 55 papillomata, 45 papillary carcinomata, 5 squamous carcinomata, 2 metastatic carcinomata, and 6 sarcomata, Buerger was able to conclude that a differential diagnosis between papillomata and carcinomata could be made in almost all instances on a pathological basis.

Certain morphological criteria were accepted as indicating the existence or the acquisition of malignant traits in any given tumor. It was only after a very thorough pathological investigation of papillomata and carcinomata that this conviction was forced upon the author. These criteria consist in certain peculiar abnormalities in the conformation of the cells, and regularly mean either the presence of primary carcinoma or carcinomatous change in a

papilloma. The abnormalities are: cells manifesting irregularities in size and shape; nuclei rich in chromatin, deeply staining and of bizarre shape; cells with atypical mitoses; giant cells; and multinucleated cells. All these when occurring in papilloma of the bladder indicate the presence or beginning of carcinomatous change. Another and most reliable evidence of carcinomatous change will be found in a disturbed relationship of the cells to each other, in a loss of the typical palisade arrangement of the cells, in the presence of long fusiform or compressed types of cells, in the existence of evidences of infiltration of the stroma and penetration of the basal membrane, in the presence of cells in the capillaries, and, finally, in the occurrence of epithelial cells in the submucosa or muscular coats of the vesical wall.

These criteria enabled Buerger to recognize the presence of a malignant tumor in 17 cases where the material would have led to an incorrect or a doubtful diagnosis if our present standards had been rejected. If these criteria are accepted, malignancy can be recognized from a relatively small amount of material, and the report "insufficient for diagnosis," such as is often made by the pathologist, will be less frequently given.

These criteria were found in parts of the tumor that are accessible in so far as they can be reached by cystoscopic instruments, and in so far as adequate portions can be removed for histological examination. The changes that are indicative of malignancy occur, not as heretofore assumed, in the "depth" where they may escape our diagnostic methods, but manifest themselves first in the epithelium not far from the surface, either with or without areas of infiltration.

A test of the morphological criteria proved conclusively that they are dependable, and if adopted lead to correct diagnosis. Many of the other loosely accepted notions regarding the malignancy of papilloma, *per se*, were found to be fallacious. Only in one tumor out of the 113 was a papilloma found to infiltrate and still retain "normal" cellular characteristics.

Thomas, B. A.: Technique of Operative Treatment of Bladder Tumors. *Surg., Gynec. & Obst.*, 1915, xxi, 135.

The author alludes to the different types of bladder tumors, 90 per cent of which comprise papillomata and carcinomata. He deprecates the term "malignant papilloma," and urges the use of terminology based upon pathological rather than clinical grounds, believing that greater attention devoted to the differentiation of papilloma and carcinoma, as revealed by cystoscopy in expert hands, would mark an important step forward in the treatment of vesical neoplasmata. He has never found it necessary to remove endovesically a portion of the tumor for microscopical diagnosis in order to determine the correct form of treatment, and he considers that such a practice is unwise in

view of the likelihood of implantation metastasis from stray tumor-cells.

Thomas believes that all papillomata, single or multiple, superficially carcinomatous or not, should be treated by high-frequency electrocoagulation, and that all operable carcinomata involving the bladder wall should be subjected to trans- or extraperitoneal partial cystectomy.

The treatment of bladder tumors is considered under two heads: (1) non-incisional and (2) incisional.

The first includes (1) high-frequency electrocoagulation, (2) radium, (3) per urethral excision, snare strangulation and cauterization, and (4) irrigations with coagulable solutions. The second is subdivided into (1) radical and (2) palliative operative treatment; the former comprising partial cystectomy and total cystectomy; the latter consisting of suprapubic cystotomy, cystostomy, and exclusion of the bladder.

Thomas presents a detailed description of these various operative procedures illustrated by nineteen drawings. A feature of the technique is a new bladder retractor which has proved most serviceable.

An analysis of 22 cases are tabulated, showing the character of the tumor, duration of symptoms, operability, nature of the operation, duration of life since operation, and final result with respect to the present condition of the patient.

Thomas reports a case of successful total cystectomy following bilateral nephrostomy and illustrates the renal drainage apparatus which proved very satisfactory with this patient.

Squier, J. B.: Radium Versus Surgery in the Treatment of Vesical Neoplasms. *Surg., Gynec. & Obst.*, 1915, xxi, 176.

Squier deduces his conclusions from observations based upon cases of extensive vesical carcinoma which had been subjected to the action of radium after incomplete operative removal and to the experimental work of Wood of the Crocker Cancer Laboratory. The action of radium being governed by the law of inverse squares is of interest, the law being that if the distance of the tube from the proximal portion of the tumor is 2 mm., and from the distal portion 12 mm., then the effect is not as 1 to 6 but as 4 to 144 or as 1 to 36. Squier claims that three factors only are dominant in the action of radium on tumors: the time of exposure, the amount of radium element, and the distance between the tube and the tissue to be acted upon. Wood's experiments seemed to prove that in radiated tumors, slowness of growth after inoculation was due to injury to the mechanism of mitotic division of the cells.

The author's conclusions are as follows:

In the light of our present knowledge, it is believed that cures in bladder tumors by the use of radium may be hoped for only in benign papillomata; that it may be possible in certain instances to render the symptoms of vesical malignancy less distressing

by intra-urethral, suprapubic, rectal, or cross-fire intra-urethral and rectal radiations; that by the time vesical carcinoma has been made clinically manifest the growth has already progressed too far to be readily influenced by the amounts of radium at present at our command; that the question of the best management of a case of vesical carcinoma is no different from the management of carcinoma anywhere else in the body; viz., if the growth is anatomically accessible, wide surgical extirpation followed by every means known to science of treating any unremoved growth or recurrence.

Geraghty, J. T.: Fulguration in the Treatment of Bladder Tumors. *Surg., Gynec. & Obst.*, 1915, xxi, 150.

Fulguration has succeeded in destroying only tumors which were of the papillomatous type, but it has been possible to destroy not only the benign but the malignant papillomata. The response to treatment, however, in the benign as compared with the malignant is of considerable interest. Where the tumors are cystoscopically and histologically benign the rapidity of disappearance is frequently astonishing. When, however, the papillomata are malignant the response to fulguration may be extremely slow and almost lead to discouragement. When the histological picture is distinctly malignant one can almost positively predict that the papilloma will require many times the amount of treatment which would have been necessary to destroy a benign papilloma of the same size. In one case with multiple malignant papilloma covering the left lateral wall of the bladder and the tumors so fused at their surfaces that it seemed like one large tumor mass, seventy-five treatments, extending over a period of nine months, were necessary to entirely eradicate the neoplasms. The result in this case might be considered brilliant because no radical operation could have given as complete a result. In the papillary carcinoma or sessile tumors where infiltration of the base is always present, the chances of eradication of the tumor by this method of treatment are practically nil, although considerable symptomatic relief may at times be obtained.

From the standpoint of ultimate prognosis it is important to have a knowledge of the nature of the growth removed, because in three cases in which malignant papilloma had been successfully removed, death occurred later from metastases, although the bladder remained free from tumor. Furthermore, recurrences have been encountered only in cases in which malignant papillomata have been removed. Up to the present time recurrences have been observed in four cases.

It can be positively stated that fulguration should be the treatment selected for all papillomata, benign or malignant, in which infiltration of the bladder wall has not occurred and that it yields results incomparably superior to the most radical operative procedures.

Keyes, E. L., Jr.: Desiccation Treatment of Bladder Tumors. *Surg., Gynec. & Obst.*, 1915, xxi, 169.

Desiccation of bladder tumors by high-frequency current introduced through the cystoscope is a treatment with a restricted field; it is applicable to papilloma but not to carcinoma, with the exception of certain circumscribed carcinomata that behave like papillomata. Contra-indications to this treatment are hardness of the tumor, intractable cystitis, sloughing or ulcerated tumor, multiplicity and size of tumor; the last contra-indication, however, is only a relative one. Multiple tumors tend to recur however treated; their treatment always includes desiccation, sometimes operation; they are very rare in patients under 50 years of age, though relatively common thereafter. The Oudin or monopolar current is preferred to the bipolar.

Complications of the treatment are electric shock, neglect of the patient, grave infection—two deaths occurred from pericystitis—and hæmorrhage.

Relapse *in situ* is extremely rare when a cystoscopy three months after the last burn shows the tumor to be cured. Relapses elsewhere in the bladder are most frequent during the first year, probably due to contact inoculation, but they may occur later. Cure should be verified by cystoscopy at the end of three months, one year, and three years thereafter.

Warren, G. W.: Some Details in the Surgical Treatment of Tumors of the Bladder. *Surg., Gynec. & Obst.*, 1915, xxi, 226.

The author urges that a surgical technique for the treatment of bladder tumors be developed. He deplors the too general use of the electric spark, his contention being that the majority of bladder tumors are malignant.

The extraperitoneal route is used whenever possible and only that amount of bladder is freed from its attachment which is necessary for complete removal of the growth. The growth itself is never touched.

The author has designed a cup-shaped clamp with which, by placing the cup side in the bladder and its mate on the outside, the growth is clamped off and isolated from the field of operation.

By this means the bladder and contents can be cleaned and freed from all particles of new-growth, Warren's contention being that the recurrences are due to infection of the freshly cut surfaces by small particles and wandering neoplasm cells of the new-growth contained in the bladder fluid.

The technique in handling the cut ureter varies little from that ordinarily used, except that no stitches are placed in the ureter itself and the ureter is freed from its attachments as little as possible.

Schapiro, S. W.: Gummatous Ulceration of the Bladder. *Am. J. Urol.*, 1915, xl, 283.

The patient, 46 years old, contracted chancre in 1897. In January, 1912, he had a syphilitic erup-

tion on the chest and hands. He received five intravenous injections of 0.6 salvarsan; the Wassermann test was negative. In September, 1914, he complained of dysuria, and diurnal polyuria as often as every 15 to 20 minutes. He lost 30 pounds in five months; residual urine 12 ounces. Cystoscopy disclosed a trabeculated bladder, an ulcer the size of a quarter to the left and below the left ureteral orifice, a smaller one to its right, and a white, hard, glistening tumor a little way from the left ureteral orifice. The Wassermann test was negative; an intravenous injection of 0.6 salvarsan was given, and a week later the Wassermann test was strongly positive.

Through an operative cystoscope the ulcers were curetted, and a 25 per cent silver nitrate solution applied. A catheter was tied in the bladder for 10 days, the catheter being changed every 24 hours. The bladder was irrigated daily with a 1:5,000 iodine solution. Mercury in the form of inunctions and injections was given. After three months' treatment the patient gained 15 pounds; voided clear urine; cystoscopy showed normal mucous membrane except for the trabeculation; and the Wassermann test was negative.

H. A. KRAUS.

Massey, G. B.: Cancer of the Penis. *Am. J. Surg.*, 1915, xxix, 299.

The author describes the technique used in two cases as follows:

The first patient, aged 50, was treated for epithelioma near the frænum, measuring 2 by 15 cm. Six fine zinc needles, connected with the positive pole of the direct current, were inserted immediately beneath the growth, and a small negative electrode pressed against the center of the growth: a current of 50 milliamperes was gradually turned on and maintained for 52 minutes. The after-treatment consisted in applying dilute zinc oxide ointment. Seven months later there had been no recurrence.

In the second case, that of a patient aged 66, carcinoma involved the entire glans penis, not extending beyond the corona glandularis. On the left side the inguinal gland was the size of a small marble. Under general anæsthesia a current of 300 to 700 milliamperes was applied for twenty-five minutes, completely devitalizing the growth up to the neck of the glands. The inguinal gland was treated by passing electrodes through the skin, and the negative pole on the skin over the gland; a current of 600 milliamperes was turned on for ten minutes.

A portion of the gland which was not included in the first treatment was readily destroyed by a monopolar application, 90 milliamperes being used with three needles for half an hour. Six months later there had been no recurrence. In both cases the tissue sloughed without producing any secondary hæmorrhage and without causing pain.

H. A. KRAUS.

GENITAL ORGANS

Savini, C.: The Treatment of Varicocele with Suspension of the Testicle. *Urol. & Cutan. Rev.*, 1915, xix, 431.

In the operation for varicocele most commonly used the excision of the veins is considered the most important step and the suspension of the testicle is always imperfect. The Italian operation is founded on the idea that in varicocele the enlargement of the veins is due in great part to a relaxation of the means of support of the testicle; so great importance is given to suspension, while excision is advised only when large varicose nodes are found in the cord. Even then ligature and excision should be limited and partial.

In performing the operation the skin is cut in the direction of Poupart's ligament for about two inches and the external ring exposed. The exposure of the cord is done with a blunt instrument and following the cord the testicle is extracted from the scrotum by cutting the ligamentum scrotale testis, thus allowing plenty of play for suspension. The tissues covering the cord are then cut longitudinally and through this incision the tunica cremasterica and the vaginalis communis are detached with blunt dissection from the two groups of veins of the cord. These veins are inspected and the largest veins of the pampiniform plexus are isolated, ligated, and resected. No excision is done if there is no very large or nodular vessel. The testicle is replaced in the scrotum, and the cremasterica and the communis vaginalis are sutured to the external ring of the inguinal canal with two or three stitches of chromic gut in such a way as to shorten the tunica and thus suspend the testicle. C. R. O'CROWLEY.

Spittel, R. L.: Calculi of the Prostate. *Brit. M. J.*, 1915, ii, 289.

Spittel reports the histories, operations, progress, and conclusions of two cases of prostatic calculi.

The first method of origin is in the substance of the prostate gland itself with the corpora amylacea as their basis; second, in pouches either congenital or acquired, which catch deposits from the urine; and third, originating in the kidney or bladder, they become lodged in the prostatic urethra secondarily.

The diagnosis in the first case was made by rectal examination, crepitation, and pain. Through a suprapubic incision the finger passed through the bladder meatus, aided by a finger in the rectum 12 faceted stones of various sizes were removed, and drainage of the bladder and the space of Retzius was then instituted. Due to the pocketing of pus, a perineal drainage had to be established eventually before the case was cured.

Spittel claims that the diagnosis of calculi of the prostate would not be difficult if one kept in mind the possibility of their occurrence and made routine rectal prostatic palpation in all genito-urinary cases, which can be confirmed by the passage of a sound if the stone projects into the urethra. The author

also advises the perineal route as the one of choice. The second case was of twelve years' standing, the patient having two urinary fistulæ, one a scrotal the other a perineal and a urethrorectal fistula. A Wheelhouse operation was done, as the bulbous stricture was an impassable one. On insertion of a Wheelhouse probe into the bladder a sensation of grittiness was felt and by means of a scoop 46 stones were removed. The urethra was partially mobilized and the deficiencies left in it by the dissection of the fistulæ were repaired with catgut. In this case most of the symptoms were due to the strictures and fistulæ rather than to the prostatic stones.

LOUIS GROSS.

Tenney, B.: Prostatic Obstruction without Hypertrophy. *Surg., Gynec. & Obst.*, 1915, xxi, 206.

Rectal examination in cases of suspected prostatic obstruction may be misleading unless the examiner remembers that obstruction may exist when the prostate is normal to rectal touch. Tabetic individuals may suffer from such internal obstructions and may recover complete urination after operation.

The obstructing deformity may be developmental and may appear in infancy or early life. Several cases are recorded with residual urine before the age of 40.

The symptoms of tight stricture in the membranous urethra and internal prostatic obstruction are alike. If thorough dilatation does not relieve the bladder the trouble is probably prostatic.

Only one-third of the cases give a history of a previous gonorrhœa. If the small hypertrophies have a bacterial origin, other bacteria must be equally irritating and more common than the gonococcus.

Internal prostatic obstructions are found as fibrous rings, bars, overhanging nodules, general fibrosis of the prostate, and congenital malformations. Some of these conditions may be properly treated by a punch, and some by galvanocautery. The author has used the suprapubic incision which allows the complete removal of all obstructions whether located at the bladder outlet or below, with perfect control of hæmorrhage.

Peterkin, G. S.: Suprapubic Prostatectomy Simplified. *Surg., Gynec. & Obst.*, 1915, xxi, 106.

In discussing his simplified suprapubic operation in adenomatous hypertrophy, Peterkin describes

minutely the general and local pre-operative treatment, technique of enucleation, and after-treatment. He claims that this operation can be performed with one assistant and with a high percentage of cures and a low mortality.

The pre-operative treatment begins thirty-six hours before operation except in emergency cases. It consists of sitz-baths, enemas, laxatives, catheterization, and washing of the bladder every six hours, heat applied to the bladder and perineum to reduce congestion, large quantities of water by mouth up to 4 p.m., and light diet.

Two hours before operation five to six glasses of water are given and one hour before, morphine and hyoscine are injected hypodermatically, followed in one hour by an injection of morphine to allay excitement. Peterkin recommends spinal anaesthesia in practically all of his cases and prefers the stavaine compound made after Babcock's formula. The bladder is washed, filled to capacity, a Zipser's clamp is placed on the penis, the abdomen is sterilized with soap, ether, and bichloride, but not with iodine, the knees are flexed and everted so as to place the soles of the feet in apposition. The author uses three gloves on the left hand, while the right hand is left bare.

A transverse suture is passed through the bladder wall and mucous membrane, which is used as a stay and guide suture; with the suture held taut, he examines the bladder in an uncollapsed state; the clamp is removed from the penis, the index-finger of the left hand is inserted into the rectum, the right index-finger into the prostatic urethra, and by forcible dilatation an abrasion is made in the urethra and the enucleation begun. Peterkin lays great stress on keeping the finger hooked and the finger-nail toward or into the adenomatous mass, to avoid the true capsule with its venous plexus. He uses a Freyer drain pushed in far enough so that the bladder walls will come above the lateral openings, yet permitting the base of the tube to remain some distance from the bottom of the bladder.

The after-treatment consists in irrigation every four hours, removal of the suprapubic drainage with cessation of bleeding, which is usually within 12 to 24 hours, and on the third day the insertion of a retention catheter.

LOUIS GROSS.

SURGERY OF THE EYE AND EAR

EYE

Todd, F. C.: A Cataract Incision Leaving an Undetached Conjunctival Flap with a Bridge of Conjunctiva on the Temporal Side. *Ophth. Rec.*, 1915, xxiv, 401.

This procedure is an attempt to secure greater safety in the cataract operation without the use of sutures. After emphasizing the general desirability of a conjunctival flap and discussing the various methods of securing it, the author describes the plan of making an uncut bridge of conjunctiva at the temporal side rather than immediately above. This location allows the easy delivery of the lens above and toward the nasal side, all necessary manipulations including irrigation of the anterior chamber being done with additional security in unruly patients. Todd lets the pointed end of the cataract knife do most of the cutting, turning the handle downward so that the pointed end completes the incision in the median line above the cornea, and the temporal incision is extremely short. The removal of immature cataracts is made safer by the thorough irrigation of the anterior chamber, which the author feels safe in doing when the eye is protected by the bridge of intact conjunctiva. Prompt healing of the incomplete incision lessens post-operative infection and prolapse of the iris and vitreous.

EMORY HILL.

Holloway, T. B.: Annular Opacity of the Lens Following a Penetrating Wound into the Vitreous Chamber. *Ophth. Rec.*, 1915, xxiv, 404.

Holloway adds two cases to the literature, one of which is exceptional in that the injury was received posterior to the lens, and the theory of Vossius does not apply; namely, that the lesion results from an indentation of the cornea forcing this structure against the iris which in turn transmits the concussion to the lens. The author's first case received a penetrating wound 9 mm. posterior to the limbus in an upward and temporal direction. A wedge-shaped piece of steel with a base 4 mm. square was removed from the vitreous chamber by a magnet. When seen one week later, large geometric opacities were found in the posterior cortical layers of the lens, and anterior to these was a typical Vossius ring consisting of punctate dots, least pronounced on the nasal side. This gradually disappeared as is usual. The supposition is that increased tension in the vitreous chamber pushes the lens forward. Whether the impact against the iris alone causes the opacity or whether both iris and lens must be forced through the anterior chamber against the cornea is problematical.

EMORY HILL.

Wood, C. A.: Shrapnel Wound of the Occipital Region with Involvement of the Visual Centers. *Ophth. Rec.*, 1915, xxiv, 392.

The interest in this case hinges upon the prognosis of an optic neuritis. A British soldier received a skull fracture with infection of the wound and retention of a fragment of shell for some weeks. Some convulsive seizures occurred, but recovery followed. Four months after the injury, the author found normal central vision, slight contraction of the fields for form and colors, and a mild receding papillitis in both eyes. He suggests that the vision may be expected to remain normal unless meningitis is responsible for the optic nerve lesion, in which case some deterioration of vision will follow.

EMORY HILL.

EAR

Miller, F. E.: A Simple Method of Aborting Middle-Ear Inflammation and Infection Leading to Mastoid Abscess. *Med. Times*, 1915, xliii, 249.

The author describes a painless, practical method of treating and aborting middle-ear and mastoid complications in cases of middle-ear infection seen before suppuration has occurred.

As a preliminary step a sterile eustachian catheter is introduced and pus or infectious material aspirated from the middle ear. With the patient's head upon a pillow, a few drops of a 4 per cent solution of cocaine are dropped into the ear if the tympanum is intact, 2 or 4 hypodermic tablets (containing morphine, gr. $\frac{1}{4}$, atropine, gr. $\frac{1}{150}$ each) being dropped into the cocaine and stirred until dissolved. A piece of sterile cotton of just sufficient size to go into the canal is loosely wound around a wooden toothpick and smeared with antiphlogistine at a comfortable temperature. This application is then carefully placed in the ear and left *in situ* for forty-eight hours, after which it is washed out, affording relief from all symptoms.

ELLEN J. PATTERSON.

Hastings, H.: Syphilis of the Internal Ear. *J. Am. M. Ass.*, 1915, lxx, 607.

The author reports in detail a case of hereditary syphilis of the internal ear, the interesting points of which are:

1. The hereditary history; interstitial keratitis, signs of which remain; the appearance of the teeth, which were markedly suggestive, although not absolutely typical, of Hutchinson's description.

2. Rapidly progressive nerve deafness in the left ear, coincident with severe dizziness; absence of bone conduction and all sounds except loud conversation; partial return of hearing and cessation of dizziness.

3. Later, rapidly progressive nerve deafness in the right ear, likewise accompanied by dizziness.

4. Failure to develop nystagmus from rotation or from hot or cold water irrigation, except with chin or chest position.

5. The "fistula symptom" in the left ear, which has been reported by Alexander as suggestive of lues of the labyrinth.

OTTO M. ROTT.

Kyle, J. J.: The Early Diagnosis of Mastoiditis. *J. Am. M. Ass.*, 1915, lkv, 496.

The author makes a plea for mastoid operation as soon as a mastoiditis is diagnosed, not because many cases will not heal spontaneously, but because of the deleterious effect upon the hearing function from an unoperated case of mastoiditis and because of the spontaneously cured case of mastoiditis being more susceptible to a subsequent attack.

As aids to the diagnosis of mastoiditis are mentioned: (1) pulsating discharge, (2) fever, (3) a properly made röntgenogram of both mastoids.

As to who should operate, the author is firm in his conviction that only men prepared for this work by skilled preceptors should be permitted to undertake these operations.

OTTO M. ROTT.

Dabney, V.: Idiopathic Mastoid Abscess. *J. Am. M. Ass.*, 1915, lkv, 501.

By the term "idiopathic mastoid abscess," the author means an abscess in the mastoid process of the temporal bone without any immediately preceding or accompanying inflammatory involvement of the tympanum.

While the causative organism may gain access to the mastoid via the blood stream, yet the author favors the view that the causative organism begins its journey in the oropharynx, proceeds through the tube to the tympanum without finding conditions favorable for growth or without having been virile up to that time, and finally arrives in the mastoid cells by way of the aditus. Here, the blood supply being poor, and the cavity practically a closed one, the conditions are ideal for its suppurative activity.

For a case to be truly one of idiopathic mastoid abscess, there must be no tympanic reaction whatever; no pain, discomfort, "fullness in the ear," tinnitus, autophony or impaired hearing, slight but perceptible.

With these restrictions in view the author has critically examined the reports of 47 cases from 36 observers, and found that only 24 could meet the requirements of his definition, while 2 were doubtful and 21 certainly spurious. The author reports 2 cases of his own, making a total of 26 reported cases of true idiopathic abscess. The results of his work are shown in a table, wherein he gives the reasons for rejecting the spurious cases.

OTTO M. ROTT.

Moskowitz, S.: The Newer Therapeutics in Otology. *N. Y. M. J.*, 1915, cii, 354.

The author tells of his experience with the use of vaccines in purulent otitis media, and draws the following conclusions:

1. The stock vaccine can be used while waiting for the autogenous vaccine.

2. The kind of vaccine used (bacteria) is determined by the clinical history.

3. Vaccines should be used as early as possible in every case of ear infection.

4. If a case has been treated by a stock vaccine, and no change has been observed for the better, the autogenous vaccine should be used at once.

5. All other modes of recognized aural treatment should be instituted and kept up during the vaccine therapy.

6. In very severe cases where there is no improvement and the disease is progressive and it seems inadvisable to wait, the appropriate operation should be performed.

7. Errors in vaccine therapy may occur from two sources: (1) Using the wrong vaccine, or the use of poor and faulty smears for the production of the autogenous vaccine. (2) Using too little vaccine, and not persisting with the injections with the regularity that the case may require.

OTTO M. ROTT.

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Dabney, V.: True Myxoma of the Rhinopharynx; Report of Two Cases. *Tr. Am. Laryngol. Ass.*, Niagara Falls, 1915, June.

The author reported two cases in which sections of the growth showed absolute absence of any fibrous elements.

In the discussion SMITH said that this must be the exception which proved the rule, as it has been definitely stated by histologists and pathologists that true myomata do not occur in these regions.

LOGAN said that these growths are more apt to appear in Scandinavians than in any other class of patients.

DABNEY in closing said that one of his patients was a German and one an American. A review of the literature failed to disclose any other report of true myoma in this region. OTTO M. ROTT.

Delavan, D. B.: The Effects of Radio-Activity upon Nasopharyngeal Fibroma. *Tr. Am. Laryngol. Ass.*, Niagara Falls, 1915, June.

The radium treatment promises to be a valuable aid in the treatment of tumors. In the application of the radium, the parts to be treated must be exposed to the rays, and the healthy surrounding parts must be protected from them. It is not necessary that the radium should be introduced bodily into the substance of the growth, as the blood-vessels of the growth are more abundant near its surface, and as the rays penetrate at least a quarter of an inch, the treatment is entirely effective in profoundly influencing the circulation, and thus, as well as by its effect upon the connective tissue of the organ, causes a reduction in its size.

COAKLEY spoke of the favorable effects he had noted in cases of: (1) epithelioma of the nose; (2) papilloma of the larynx; (3) angiofibroma of the nasal cavity.

FREER thought that the combination of surgery with radium would be less tedious and more satisfactory. OTTO M. ROTT.

Sluder, G.: Hyperplastic Sphenoiditis and Its Clinical Relations to the Second, Third, Fourth, Fifth, Sixth, and Vidian Nerves and Nasal Ganglion. *Tr. Am. Laryngol. Ass.*, Niagara Falls, 1915, June.

The author stated that the size of the cavernous sinus rather than that of the sphenoid cell was what determined the close relationship of the above enumerated nerve-trunks to its bony wall. He spoke of the striking difference, clinically, between the nerves in the canals — maxillary and mandibular

branches of the fifth and Vidian — compared to the third, fourth, and sixth, which rub through the wide gap of the sphenoidal fissure, the former being a clinical question much more frequently than the latter. The slow-growing bone increase had for its clinical history long-standing pain and often very slow progressive loss of vision; the cases of violent headache and rapid loss of vision showed acute otitis engrafted on the chronic process. The clinical picture in the chronic cases arose from narrowing of the bony canals. OTTO M. ROTT.

Wilson, J. G., Coffin, L. A., Mosher, H. P., and Others: The Consideration of Pansinusitis Exclusive of External Operations. *Tr. Am. Laryngol. Ass.*, Niagara Falls, 1915, June.

Wilson spoke of the great importance of the defective or destroyed ciliated cells and lymphatic system in favoring the occurrence and persistence of pansinusitis. Other factors are narrowing or obstruction of the ostia or nasal cavity from mechanical causes; disease in the adjacent part of the nasal cavity which has resulted in destruction of the cilia; scar tissue or tissue devoid of cilia, either from disease or from a nasal operation.

COFFIN discussed the non-operative treatment of the sinuses, stating that he does not think of curing but of arresting the process. Negative pressure in conjunction with autogenous vaccination has been followed by very satisfactory results. By means of his special apparatus Coffin applies suction, drawing mucus from the cavities, using in special instances a cannula connected with the suction apparatus; following this, air is made to enter the vacuumized cavities under considerable pressure, medicated by a nebula of oil variously laden with remedial agents, as Bulgarian bacilli or an iodine preparation.

MOSHER gave some observations upon the intranasal exenteration of the ethmoidal labyrinth in pansinusitis, prefacing his remarks by a description of the fundamental anatomical points. He then mentioned Hajek's and Ballenger's operation, following with a detailed description of his own method, as follows:

The anterior end of the middle turbinate is first removed. The initial plunge of the curette into the ethmoidal labyrinth is made at the extreme upper part of the middle turbinate and a little farther backward. If the curette does not readily break into the labyrinth, it should be carried a little higher and a little farther back. Once in the labyrinth the curette is turned and swept forward until it strikes the posterior surface of the ascending process of the superior maxilla. Then it is turned so that it faces posteriorly, and by backward and downward

sweeps, the uniform process, the ethmoidal bulla and its cells are opened. Fragments are removed by a small round tonsil punch. The nasofrontal duct is then probed and enlarged by sounds and rasps; if the probe slipped upward along the posterior border of the ascending process of the superior maxilla does not find the sinus, it is carried backward to the limit of the roof of the operated cavity and brought forward with the point turned outward. Only as a last resort should the point be turned inward. This completes the first stage of the operation.

In the second stage, the head of the patient is held so that the cribriform plate is level. The curette is then plunged through the attachment of the middle turbinate and carried backward to the outside of the middle and superior turbinates to the front wall of the sphenoidal sinus. The face of the curette is then turned downward and the bowl and shaft forced through the bottom of the ethmoidal labyrinth. The middle turbinate is then left hanging by its posterior end and is snared off. The round tonsil punch now removes any remaining portion of the inner wall of the labyrinth posteriorly, which is obscuring the nasal face of the front wall of the sphenoid. Finally, the inner surface of the os planum is curetted from behind forward, and the area is packed over night.

FREER discussed the opening of the frontal sinus through the nose by beginning with the severing of the anterior attachment of the middle turbinate or with resection of its anterior half, if necessary. If needed the uncinat process is cut away with the Freer's sharp septum elevators to expose the bulla ethmoidalis fully to view. With a ring curette whose edge is directed forward and obliquely upward and inward against the bottom of the bulla, the bulla is entered and the curette is made to sweep away the anterior ethmoid cells from the bulla forward and upward to the ascending process of the superior maxillary bone, and if possible, to the sinus floor, breaking through the latter and entering the sinus behind the crista nasalis interna. If the sinus floor proves too hard to give way to the curette, an especially devised probe curette is passed through the sinus ostium after the way through it has been found by an ordinary probe, and the probe curette is made to cut its way out of the sinus through the ethmoid cells under the orbital plate of the frontal bone, thus enlarging the ostium posteriorly so that a larger curette of the same form may be passed up into the sinus to clear away all of the cell remnants under the orbital plate and in the pathway down into the nose from the sinus, this pathway lying between the lamina papyracea of the ethmoid bone and its turbinal wall.

SHAMBAUGH reported two cases of chronic pansinusitis associated with systemic infection. In one case an attack of acute articular rheumatism occurred, which disappeared after the opening of a large posterior ethmoid cell and the neighboring sphenoid sinus. In the other case a severe chronic

arthritis involving every point in the body occurred as the result of a severe acute articular rheumatism which followed an acute exacerbation of the longstanding sinusitis.

In the discussion SMITH presented an instrument which creates a vacuum, and while there is a vacuum injects lactic acid bacilli. The syringe is loaded with lactic acid bacilli in a solution of argyrol, enzymol, or any other preparation. Subacute and chronic cases have all been improved.

HUBBARD claimed the mucosa would not stand more than three to four pounds of negative pressure, hæmorrhage resulting if more were employed.

SWAIN spoke highly of Coffin's method.

BARNHILL has had good results from Mosher's method which he says is safer than some of the others.

RICHARDSON said that in the Mosher operation there was danger of entering the antrum unless one is very cautious in making the downward stroke.

INGALS said that with his own method he obtained 90 per cent better results in the chronic cases, but in the acute cases the Mosher operation was admirable.

COFFIN stated that he used a chisel instead of the curette as advised by Mosher. He makes an up and down incision with the chisel, then bears upward toward the median line and at that point introduces Luc's forceps. After three bites he can look into the sphenoid.

CASSELBERRY uses the Mosher method, but he has had trouble in getting through the turbinal plate.

OTTO M. ROTT.

THROAT

Heller, I. M.: Acute Infectious Inflammations of the Throat. *N. Y. M. J.*, 1915, cii, 406.

Under this heading the author groups such apparently different diseases and names as angina, angina ludovici, Vincent's angina, tonsillitis (erythematous, follicular, parenchymatous, exulcerating, oedematous, erysipelatous, phlegmonous, and abscess), peritonsillitis, pharyngitis, and laryngitis (acute and erysipelatous), submucous laryngitis, oedema of glottis, etc., and the pseudomembranous group. Instead of the above being considered as distinct and separate affections they belong etiologically, pathologically, and clinically close together, if they are not absolutely identical.

With the exception of the Klebs-Loeffler bacillus of diphtheria and the bacillus of Plaut-Vincent, observers have thus far failed to discover any specific germ to be the invariable cause of the affections mentioned above. Other important factors in the bacteriological field are the colon bacillus, pneumococcus, staphylococcus, streptococcus, and some others.

Twenty years ago Semon claimed that the above affections were one and the same disease, differing not in kind but in location and degrees of virulence. His conclusions at that time, which the author

quotes, were that the various forms of acute inflammation of the throat and neck, hitherto considered as so many essentially different diseases, are in reality pathologically identical, i.e., the same morbid process not necessarily caused by the same germ; that they merely represent degrees, varying in virulence, of one and the same process; that the question of their primary localization and subsequent development depends in all probability upon accidental breaches of the protecting surface through which the pathogenic micro-organism which causes the subsequent events finds an entrance; and that it is absolutely impossible to draw at any point a definite line of demarcation between the purely local and the more complicated, or the purulent and oedematous forms.

The similarity of the morbid processes is shown by several factors:

1. They all exhibit the same local manifestations in the clinical and pathological sense. The disease may assume one of four types: (1) the catarrhal types, (2) the pseudomembranous type, (3) the serous exudative or oedematous form, (4) the cellular exudative or infiltrating form resulting in either a phlegmon or an abscess.

2. They all display the same general symptoms: (1) fever, (2) leucocytosis, (3) anæmia, (4) enlarged spleen, (5) kidney irritation, (6) depression of nervous system, (7) bacteræmia, septicæmia, and pyæmia.

3. In all there is more or less sudden onset, frequently with a chill, local pain and tenderness, and difficulty in swallowing.

As regards treatment, scarification and incisions, compresses, rest and supportive measures, and the use of antistreptococcic serum, are advised. Caution is urged against the use of a general anæsthetic.

OTTO M. ROTT.

Makuen, G. H.: The Surgical Anatomy of the So-called Capsule of the Faucial Tonsil. *Tr. Am. Laryngol. Ass.*, Niagara Falls, 1915, June.

MAKUEN stated that what is called the capsule of the tonsil is only a part of the intrapharyngeal aponeurosis, as is also the plica triangularis or plica tonsillaris, and that the operation usually performed is not a complete extracapsular tonsillectomy, as that would imply a resection of the aponeurosis down to and exposing the superior constrictors. On the contrary, only that portion of the aponeurosis which is adherent to the tonsil is removed.

CASSELBERRY said that it was simply a matter of terms and not technique, the same operation being called intracapsular by one and extracapsular by another. He would retain the conception of the tonsillar capsule as it is easily separated from the remainder of the aponeurosis.

WILSON could not understand how the author could call the part of the covering of the tonsil which comes from the aponeurosis of the muscle a part of the capsule of the tonsil; the capsule of the tonsil being normally very thin.

SHAMBAUGH likewise did not agree with the view of the author relative to the thickness of the capsule and the adherent condition of the tonsil to capsule in old age.

SWAIN stated that if the tonsil is dissected out in the cadaver, it is found that there is, in a child, a very slight line of demarcation where the covering of the tonsil ends and the posterior pharyngeal wall membrane begins.

BARNHILL said that he had observed a large number of tonsils which demonstrated that there is an external capsule which is connected with the deep tissues of the neck and another which has nothing at all to do with this.

COFFIN said that his conception of the tonsil with its capsule was that it was somewhat like a tangerine with its peel. The outside skin can be easily removed without the fibrous covering just over the pulpy part. This fibrous covering being the capsule of the fruit and not the outside rind.

SLUDER asked if there was a delimiting membrane which bore the crypts at one end; also, if there was a fibrous delimiting membrane which covered the posterior construction and pillars, or if the crypt was open on its lateral aspect or closed by an envelope.

MAKUEN replied that it was closed by a very thin membrane. If that were uniformly the case his technique would be ideal; if it be not the case, the turning of the blade does not remove the last call of lymphoid tissue, in which event it is not a success.

In closing, Makuen said that he used the term intracapsular tonsillectomy because no distinction had been made between the true capsule and this membrane to which it is so closely attached at times that it seems to be a part of the capsule itself. He objects to the use of a sharp instrument because it is so easy to penetrate this membrane.

OTTO M. ROTT.

Richardson, C. W.: Tonsillectomy in the Adult; Is There Justification for Doing so Many Indiscriminate Tonsillectomies for Remote Infections? *Tr. Am. Laryngol. Ass.*, Niagara Falls, 1915, June.

The author called attention to the fact that there are a number of focal sources, other than the tonsils, which cause general infection, and decried the practice of blaming tonsils for it all.

He doubted that there was any necessity of removing the tonsils except in unusual cases, where there was no evidence of disease or tenderness or hypertrophy, wherein there was general infection, simply for the purpose of correcting such a condition. He also disapproved of the removal of tonsils in cases where there was simply the history of a previously existing case of tonsillitis preceding general infection and where the tonsils seemed absolutely normal at subsequent inspection. Cases were cited to prove his contention.

SWAIN admitted that many tonsils were removed unnecessarily, and said that any method which would lead to some way of estimating quickly and

accurately as to whether a tonsil should or should not come out, would be of tremendous advantage.

MAKUEN believes that good drainage and removal of the possibility of infection can often be secured by local attention to crypts instead of by tonsillectomy.

CASSELBERRY said that he was unable to decide that a tonsil was not diseased simply because he did not see any pus or detritus, and if such is not found, one should look elsewhere.

HUBBARD spoke of the work of Price of Cleveland relative to finding the specific germ around the teeth which is causing the systemic infection. By cultures certain teeth were excluded and the diseased root was located. Hubbard thinks by this method we should be able to determine whether the tonsil is at fault or not.

LOEB said that it was not easy to know when the tonsil was at fault and if no other source of infection could be found the tonsils should be removed.

LOGAN spoke of the influence of lymphoid tissue at the vault of the pharynx in causing systemic infection.

SHAMBAUGH thinks we can tell pretty accurately whether or not a tonsil is at fault by the history and by close inspection. If, however, the tonsil looks healthy and there is no history pointing to the tonsil as a source of the infection, he would take out the tonsil, but only after the internist had carefully excluded all other foci.

FREER stated that he did not consider the tonsil the cause of infection if there was no lymphatic involvement. SHAMBAUGH replied that glandular infection had nothing to do with systemic infection.

OTTO M. ROTT.

Mayer, E.: The Early Recognition of Cancer of the Upper Air Passages. *Am. J. Surg.*, 1915, xxix, 251.

The author reviews the question of the early recognition of cancer in the upper air passages, and devotes considerable space to the fact that an early operation in these cases is the only chance that the patient has. He says that there are certain symptoms of early cancer in each of the different localities of the nose and throat by which a diagnosis can be made at an early enough period to lend hope for a successful outcome of an operation. For instance, in the nose the early symptoms are usually obstruction accompanying ordinary catarrhal conditions. When the case has progressed so far that there is marked pain or evidence of tumor formation in the nasal passages, it certainly indicates that the disease has originated in one of the sinuses, and extended thence into the nasal chambers. This condition is usually too far advanced for a successful outcome to be hoped for.

Cancer of the tongue and pharynx may be recognized in ample time to secure successful results by surgery, and it is well known that intrinsic cancer of the larynx usually gives ample warning by cough, hoarseness, and radiating pain, when one is educated to read such warning.

Perhaps the best results obtained by operation on cancer on any part of the body are those secured by early operation on intrinsic cancer of the larynx.

GEORGE M. COATES.

Hubbard, T.: Papilloma of the Larynx. *Tr. Am. Laryngol. Ass.*, Niagara Falls, 1915, June.

Five cases presenting complications and necessitating special features of surgery and general treatment were reported. The first case was like a papilloma but was diagnosed microscopically to be an epithelioma. Two tumors removed at different periods were pronounced malignant. Treatment was removal by forceps, followed by cauterization, made thorough by means of a fenestrated intubation tube whereby the crystals of trichloroacetic acid were rubbed into the base without injury to the sound mucosa. No recurrences have been reported to date, now about 12 years since.

The second case presented asthma as a complication.

Two cases of papilloma in children were reported, and both had emergency tracheotomy.

The last case was a papilloma of the larynx in an adult operated upon thoroughly about six times in one year, with active recurrence each time. The case was finally cured by the use of neck massage. The author believes that massage accomplishes precisely what is aimed at in the tracheotomy. Normal nutrition is restored and normal functional activity maintained. This method is urged in connection with timely operative measures, even in young children, in preference to tracheotomy and prolonged rest. In the discussion Clark stated that he did not believe that leaving a tracheotomy tube in place for a long period hindered the restoration of the function of the larynx. He urges the use of the indirect method of laryngoscopic examination, which is the better method for adults.

THRASHER advised telling the patient that the operation would probably have to be repeated, especially if the patient be under 16 years of age. He is doubtful about the advisability of massage.

BARNHILL prefers to open the larynx so that he can see what he is doing. He believes Lynch's method will prove successful because it is largely in the open.

SMITH also spoke highly of Lynch's method.

COFFIN spoke of the value of radium.

MAYER, speaking on the etiologic phase of the question, stated that he had had two cases in adults working in tunnels and breathing compressed air.

CROSBY GREENE, JR., stated that he did not think that Lynch's method would be sufficient unless the immunity of the patient had been established.

SWAIN spoke of good results secured by spraying the surface with alcohol.

LYNCH stated that of the 16 cases in which he had operated by dissection with suspension, there had been no recurrence.

OTTO M. ROTT.

Butler, R.: History of a Tumor of the Pharynx Eventually Terminating in Sarcoma. *Tr. Am. Laryngol. Ass., Niagara Falls, 1915, June.*

At first the tumor disappeared after inunctions and protiodide of mercury treatments. An almost fatal recurrence was relieved by iodide of potassium, mercury, and neosalvarsan. In two other recurrences the X-ray treatment was used in addition to mercury, iodide of potassium, and neosalvarsan. The Wassermann reaction was weakly positive at first and the luetin reaction positive. The first microscopical examination suggested syphilis; the second small round-cell sarcoma. The autopsy showed small round-cell sarcoma with beginning metastasis.

RICHARDS said that a certain number of sarcomata of the upper air tract seem to spontaneously disappear, or to be influenced by remedies which it hardly seems possible would have any curative effect.

LELAND spoke of a cure of lymphosarcoma of the neck, by the use of Coley's fluid. SMITH cited a case of cure with Coley's fluid. SWAIN spoke of having both good and bad results with Coley's fluid.

OTTO M. ROTT.

Hill, W., Grant, J. S., Moore, I., and others: Report of the Laryngological Section of the Royal Academy of Medicine, London, 1915. *Proc. Roy. Soc. Med., 1915, viii, Laryngol. Sect., 101.*

HILL presented a case of a man, aged 55 years, who had a malignant growth the size of a walnut at the left base of the tongue with secondary involvement at the angle of the jaw. Treatment with radium bromide resulted in almost complete disappearance of the growth.

GRANT reported a case of a nose bent conspicuously to the left treated by submucous resection of the septum with rotation through half a circle of the cartilage on its anteroposterior axis, so that any "spring" tended to incline the nose to the right. The incision was sewed up and the result was very satisfactory.

MOORE reported a case of a boy, aged 16, with a nasopharyngeal fibroma measuring 1.5 inches by 1.25 inches which was removed through the mouth. The growth was sessile, attached by a broad fibrous base to the basisphenoid and occipital bones, with a prolongation extending to and firmly attached to the spheno-ethmoidal recess of the left naris. He also reported a case of a man, aged 42 years, with a growth filling the upper two-thirds of the right antrum extending into and occluding the middle meatus and the right side of the nasopharynx. The microscopic examination of a specimen from the antral growth showed it to be of a chronic inflammatory nature. The Wassermann reaction was negative. He reported a case of malignant stricture of the œsophagus in which dysphagia was relieved by the insertion of a feeding tube so that the patient could swallow soft food, with the result of a gain of several pounds in weight.

SPICER reported the case of a woman, aged 70 years, with a growth in the postnasal space, grayish in color, the surface rough and cauliflower-like in appearance, which blocked the nasal fossæ and could easily be seen from the mouth by lifting the soft palate. The growth was removed under cocaine anæsthesia; microscopic examination showed it to be lymphosarcoma.

JEWELL showed a specimen from a child, 22 months old, who had a coin in the œsophagus just below the sternoclavicular articulation for ten days. It could not be removed by œsophagoscopy on account of it being embedded in the posterior wall of the œsophagus. The child died on the thirteenth day, both sides of the œsophagus being perforated.

MAJOR SIR WILLIAM MILLIGAN and MAJOR WESTMACOTT reported their experience in treating injuries to the nose, sinuses, and throat, incidental to war. They were impressed with the comparative immunity from septic complication of many of the injuries of the face and neck, due, in part to the absence of clothing in these regions and consequent non-contamination of the wound with portions of uniform, soiled underwear, earth, manure, etc., and also to the fact that in many cases the tracts of infection communicated with the external air by way of the nasal passages, mouth, larynx, etc., a circumstance unfavorable to anaërobic infection of discharges from the wound.

In injuries to the nose and nasopharynx the immediate anxiety is to arrest hæmorrhage, and the remote, how best to restore function and appearance by some form of plastic operation.

Where a projectile or piece of shrapnel has become deeply embedded in the bony framework of the face, nose, or that portion of the vertebral column corresponding to the epipharynx, pharynx, or hypopharynx; when its position has been accurately located by radiography; and when there is neither troublesome hæmorrhage nor evidence of sepsis it is considered best to leave it alone, and with repeated clinical and radiosopic examinations to ascertain if it is remaining quiescent.

Injuries to the larynx have been rare, but one class of cases which differs from the type of projectile injury is injury to motor and sensory nerve-tracks coming under the heading of "warfare neuroses." There is no paresis of the adductors, as in hysterical aphonia, but there is a total inability to put the cords in motion, due to a sudden arrest of those volitional impulses necessary to speech.

TILLEY reported two cases of functional aphonia following the bursting of a shell in close proximity to the patient, treated by a moderate intralaryngeal faradic shock.

In the discussion on functional aphonia the general consensus of opinion was that all cases should be carefully examined for pathological conditions in the nose, nasopharynx, or accessory sinuses, and for tuberculosis of the larynx or chest.

ELLEN J. PATTERSON.

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